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THE UNIVERSITY OF ALBERTA

"COMPRESSED" WORK WEEK FOR NURSING STAFF:
A FIELD EXPERIMENT

BY



JUDITH M. HIBBERD

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH
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THE UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled "'Compressed' Work Week for Nursing Staff: A Field Experiment," submitted by Judith M. Hibberd in partial fulfilment of the requirements for the degree of Master of Health Services Administration.

ABSTRACT

This field experiment was conducted in one surgical and two medical units of a general acute hospital over a period of fifteen weeks. The study was undertaken to investigate the relationship between a "compressed" work week for nursing staff and five dependent variables: patient satisfaction; selected characteristics of nursing care; work satisfaction of nursing staff; and selected fixed, and selected variable costs of staffing.

A quasi-experimental research design was used to control for possible sources of internal invalidity, and to identify the existence of novelty and/or disruptive effects. Testing occurred at the pretest and at three subsequent five week intervals. Nursing staff of the three units volunteered for the study, thus attitudes were positively biased at the pretest; the surgical unit was used as the control unit.

The new work schedule (six twelve-hour shifts and one eight-hour shift per two weeks) was introduced in the two experimental units after the pretest; one unit used this schedule throughout the study, and the other unit reverted to its regular schedule for the five middle weeks of the study.

Three research instruments were used for data collection purposes in relation to three of the dependent variables. A Patient Satisfaction Questionnaire was selected and used in its original form. The Nursing Care Observation

Sheet, and the Job Satisfaction Questionnaire were developed from previously constructed instruments. Inter-judge consistency of ratings by two nurse observers was established for the Nursing Care Observation Sheet. Response consistency to paired items of the Job Satisfaction Questionnaire and factor analysis were conducted to establish the reliability and validity of this instrument.

Analysis of data revealed that while there were some significant differences between the three nursing units, no significant differences were observed within the units over the four testing periods in: patient satisfaction, nursing care, or global attitudes of nursing staff to their work. Responses to the question on shift preference, however, revealed a significant directional change towards preference for eight-hour shifts by the end of the study. Nurses reported that twelve-hour shifts were too long and too tiring. No material changes in fixed or variable costs of staffing were incurred during the experimental period. It was concluded that redistributing the hours of work of these nurses did not affect costs of staffing, patient satisfaction, or selected characteristics of nursing care, but that attitudes of nursing staff to one dimension of the work situation, namely, the new schedule, were significantly and adversely affected.

This study was limited in scope and generalizations from the findings are tenuous, but it is of interest to hospital and nursing service administrators in relation to

the organization and evaluation of nursing services.

DEDICATION

To my parents, as a token of my regard for their
example, wisdom, and generosity.

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CHAPTER I

INTRODUCTION

Statement of the Problem

There is evidence in contemporary American society of an innovative approach toward the implementation of three- and four-day work weeks for industrial employees.¹ The potential advantages in industry of re-arranging hours of work such that the work day is extended and the work week reduced include: increased productivity from more intensive use of capital equipment; greater efficiency from spreading fixed costs over more operating hours; and extended services to customers. Also, companies that have adopted new kinds of "compressed" work week patterns for employees report substantial reductions in turnover of staff, absenteeism, overtime expenses, and recruitment problems. From an employee's standpoint, some of the attractions of a four-day work week would seem to be the increase in consecutive time at home, and a reduction in travel time to and from work.²

¹S. M. A. Hameed, "Economic and Institutional Determinants of the Average Work Week in Canada," in Work and Leisure in Canada, ed. by S. M. A. Hameed, and D. Cullen (Edmonton, Alberta: University of Alberta, 1971), p. 1.

²Riva Poor, ed., 4 days, 40 hours: Reporting a Revolution in Work and Leisure (Cambridge, Mass: Bursk and Poor Publishing, 1970), Ch. I.

The efficacy of these kinds of work schedules would seem to depend, in part, on the nature of the work being performed. We cannot assume, ipso facto, that the advantages experienced by petrochemical industries, for example, would apply to the health field in general or the general acute hospital in particular; it is the question of the feasibility of compressed work weeks for hospital employees which is raised in this study. Increased productivity in health agencies would not seem to be as readily demonstrable as in industry, but if there are potential advantages such as reduced turnover of staff and absenteeism, compressed work week schedules would seem to warrant investigation. As yet, these possibilities have been largely unexplored. For example, if hospital nursing staff were to negotiate for, and be granted a four-day work week, we do not know what kind of impact such an organizational change would have upon the services rendered to patients, the welfare of the nursing staff, or on the costs of staffing. This study is a preliminary investigation into some of these points, and the particular research question raised is as follows: What is the relationship between a compressed work week for nursing staff and (1) patient satisfaction, (2) selected characteristics of nursing care, (3) work satisfaction of nursing staff, (4) selected fixed costs of staffing, and (5) selected variable costs of staffing?

Although there were many factors which could have been

selected for investigation when introducing a compressed work week for nursing staff, the five variables outlined in the research question above were chosen because of their critical importance in relation to the achievement of organizational goals.

The Need for the Study

There would seem to be at least three major reasons why an examination of compressed work week schedules for nursing staff is needed. First, from a practical point of view, new and attractive modes of scheduling the hours of nursing staff might be a potential force for reducing nursing turnover rates, promoting the retention of high calibre nursing personnel in hospitals and community health agencies, and inducing inactive nurses to return to work. Although the demand and supply of general staff nurses at the present time in Canada would appear to be close to the point of equilibrium, there is no guarantee that this situation will prevail,¹ so the investigation of new and possibly more flexible kinds of work schedules would seem to be a worthwhile project.

Secondly, of the few experiments with compressed work week schedules for nursing staff reported in the literature,

¹Beverly Witter Du Gas, Nursing Resources in Canada: An Analysis of the Current Situation: Projections Regarding Supply and Requirement: Interim Objectives (Ottawa: Department of National Health and Welfare, December, 1971). Mimeo-graphed.

none seems to have demonstrated methodological rigour. One of the first experiments with a compressed work week schedule for nursing staff was conducted at the Roger Williams Hospital, Rhode Island, in 1970. The purpose of implementing ten-hour shifts in this hospital was to overcome work scheduling problems, and to increase the number of full time nurses on the staff.¹ Similar problems with work scheduling and staffing apparently gave rise to experimentation with ten-hour and twelve-hour shifts in other hospitals. For example, ten-hour shifts were implemented in one hospital because off duty time in previous work schedules was neither predictable nor equitably distributed.² Problems in obtaining nursing staff to work on the evening shift,³ and concern with regard to the provision of nursing services during peak vacation periods,⁴ have been cited as reasons for implementing three- and four-day work weeks. The investigators in these experiments reported varying degrees of success, but mostly in terms of the advantages for the

¹Ray Richard, "Four-day Work Week Works for Hospital Nurses:" American Journal of Nursing, 70 (November, 1970), 2282-83.

²Jeannine Bauer, "Clinical Staffing with a 10-hour Day, 4-day Work Week," Journal of Nursing Administration, 1 (November-December, 1971), 12-14.

³Sister Mary Ann Minor, and Betty Heldstab, "10- and 6-hour Nursing Shifts Solve Staffing Problem," Hospital Progress, 52 (July, 1971), 62-63, 66.

⁴K. G. DeMarsh, and E. K. McLellan, "Nurses Sold on Shortened Work Week," Canadian Hospital, 48 (November, 1971), 64-66.

nursing staff. Although it was generally reported that nursing care "improved" as a result of the change in the nurses' hours of work, it was not clearly indicated how nursing care was measured, nor whether fiscal assessment was attempted.

Finally, from a theoretical standpoint, there is evidence that structural changes within a social unit [such as the redistribution of working hours] can have impacts upon the process and/or the tasks being performed, and upon the attitudes of the people involved.¹ Thus the adoption of an organizational innovation such as the introduction of a compressed work week for hospital nursing staff, should be carefully and systematically examined for potential changes in the care of patients, and in the attitudes of nursing staff.

It would seem that in order to develop personnel policies in relation to compressed work week patterns, a comprehensive study involving a representative sample of hospitals would be the "ideal" research approach. The study presented here is limited in scope, but it is hoped that the findings will provide some beginning data which may be of assistance in the development of future rationalization of staffing patterns in nursing service departments of hospitals.

¹With regard to such evidence, see Goodwin Watson, Social Psychology: Issues and Insights (Philadelphia: J. B. Lippincott, Co., 1966), Ch. VI.

Description of the Study

This study is best described as a field experiment.¹ In view of the limited scope of the study and the relatively gross nature of the measurement of dependent variables, it should essentially be regarded as exploratory rather than constituting a definitive study. A pretest-posttest control group design was used,² the methodological details of which are elaborated in Chapter III.

Definitions

For the purposes of this study the following definitions apply:

Compressed Work Week: refers to a staffing schedule in which nursing personnel work six twelve-hour shifts and one eight-hour shift in a two week period. Compressed work week is also referred to as the new schedule.

Regular Schedule: refers to a work schedule made up of eight-hour shifts. Nursing staff usually work ten eight-hour shifts in a two week period with this type of schedule.

Nursing Unit: refers to a geographic in-patient area of the hospital, having an assigned number of beds, administered by one head nurse and staffed by its own regular complement of nursing staff.

Selected Characteristics of Nursing Care: refers to selected components of nursing care

¹Fred N. Kerlinger, Foundations of Behavioral Research: Educational and Psychological Inquiry (New York: Holt, Rinehart and Winston, Inc., 1964), p. 382.

²Donald T. Campbell, and Julian C. Stanley, Experimental and Quasi-Experimental Designs for Research (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1970), pp. 13-24.

activities performed by nursing personnel in the nursing unit.

Patient Satisfaction: refers to the patients' perceptions of the nursing care that they have received in the nursing unit.

Work Satisfaction: refers to the overall attitude of nurses towards the work roles that they currently occupy.¹ The terms work satisfaction and job satisfaction are used synonymously throughout the study.

Fixed Costs of Staffing: refers to costs incurred by the hospital through provision of nursing salaries and fringe benefits which do not ordinarily change within the annual budget period.²

Variable Costs of Staffing: refers to costs incurred by the hospital as a result of fluctuations in the need to supplement the regular complement of nursing staff in the nursing unit.

Registered Nurse: is a person who meets the requirements for active nursing registration in the Province of Alberta, and in the absence of the Head Nurse or Assistant Head Nurse, is able to assume responsibility for the nursing unit.

Head Nurse: is a Registered Nurse charged with the responsibility of ongoing administration of the nursing unit.

Assistant Head Nurse: is a Registered Nurse who takes charge of the nursing unit on the evening shift.

Certified Nursing Aide: is a person who

¹Derived from a definition of job satisfaction by John M. Ivanevich, and James H. Donelly, "Job Satisfaction Research: A Manageable Guide for Practitioners," Personnel Journal, 47 (March, 1968), p. 172.

²Derived from a definition of fixed costs by Charles T. Horngren, Accounting for Management Control: An Introduction (2nd ed., Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1970), p. 240.

has completed a vocational nursing programme, and who works under the supervision of a Registered Nurse and performs basic nursing care functions.

Nursing Orderly: is a man who has completed a vocational nursing programme or equivalent, and who works under the supervision of a Registered Nurse and performs basic nursing care functions, and special nursing care functions for male patients.

Hospital Assistant: is an auxillary nursing worker who has received an on-the-job training, and who does not engage in nursing care activities other than to make empty beds and to perform tasks which may be considered peripheral to the nursing process.

Ward Clerk: is a non-nurse who performs clerical work, answers the telephone, and is a general receptionist for the nursing unit. The Ward Clerk does not transcribe doctors' orders.

Limitations

In order to evaluate properly the long term consequences of a major change in scheduling hours of work, a trial period of no less than a year would seem necessary, for within such a period of time, the scheduling system could be assessed in relation to: seasonal fluctuations in the numbers and types of patients; sickness patterns of nursing staff; staffing constraints such as vacations, and the regular occurrence of all statutory holidays. The experimental staffing schedule in this study was designed to cover a period of only fifteen weeks, namely mid-January to early May. However, the investigator reasoned that fifteen weeks would be long enough for changes to occur in

patient care, and for nursing staff to form some basic opinions with regard to the scheduling system; long enough to obtain a reasonable sample of patient opinion of nursing care; and extensive enough to reflect potential changes in the cost of staffing.

There are limits to which the experimental variable can be manipulated in a field experiment, particularly when conducted within nursing units. The research must not be allowed to jeopardize the process of treating and caring for patients. In a study of this kind uncontrolled environmental factors may contaminate the research situation.¹ No attempt was made in this study to control environmental factors such as patient census, the volume of nursing activity or inservice education programmes. The social setting would cease to be in vivo if indeed such factors were controlled. Nevertheless, the potential differential impact of such factors should be kept in mind.

Theoretically, the process of random assignment of nursing personnel to experimental units would appear to be ideal for this study.² Not only did practical and ethical reasons prohibit random assignment, but the internal validity of the experiment would have been compromised if nurses were randomly assigned to new work groups at the same time

¹Kerlinger, op.cit., p. 383.

²See Campbell and Stanley, op.cit., p. 15, for a discussion of randomization of experimental subjects to groups.

as being subjected to a new schedule of working hours. Participation in the experiment was on a voluntary basis which may in one sense be considered a limitation, but the bilateral nature of union contracts would suggest the condition of mutual acceptability in matters as basic as work week patterns. Thus majority agreement of nursing staff to change their working hours can in this case be considered a valid precondition, quite apart from the fact that the imposition of a new schedule of working hours on an unwilling staff was outside the focus of this study.

The study was limited to members of the nursing staff whose hours of work were redistributed. Nursing personnel whose hours of work remained the same were: nursing orderlies because they were not in favour of the concept of compressed work week; part time nurses; and one ward clerk.¹

Finally, the findings of this study are strictly speaking limited to the three nursing units in which the experiment took place, though it was hoped that they would form some basis for tentative generalizations of a broader nature.

Assumptions

Assumptions were made that the patients and staff would respond frankly to the questionnaires at repeated

¹This ward clerk volunteered for the study but was unable to make an equitable arrangement with her regular relief ward clerk to cover an increased number of days off duty.

testing periods, and that the information supplied by hospital personnel with regard to costs of staffing was reliable.

Hypotheses and Descriptive Data

This study was designed to test the following hypotheses:

H₀: Patient satisfaction is not affected by a redistribution of working hours of nursing staff.

H₀: Selected characteristics of nursing care are not affected by a redistribution of working hours of nursing staff.

H₀: Work satisfaction is not affected by a redistribution of the working hours of nursing staff.

Data related to costs of staffing are presented in descriptive form i.e., frequency tables, and include the following indices: (1) sickness hours, (2) absent hours, (3) relief staff hours, (4) resignations, (5) commencements, and (6) transfers of staff to and from the research units.

Early Beginnings of the Study

This study took place in three nursing units of a general acute hospital of over 500 beds. The investigator met with administrative personnel and representatives of: the Graduate Staff Nurses' Association of the hospital; the Alberta Certified Nursing Aide Association; and a local of the Canadian Union of Public Employees. The study was explained and discussed, and sample work schedules demonstrating ten-hour and twelve-hour work schedules were circulated for inspection. Assurance was given that with the

exception of the length of working day, no provisions of the three labour contracts would be violated as a result of the implementation of the experimental work schedule.

The normal hours of work under the two Nursing Association contracts were eighty hours for fourteen calendar days, and under the Canadian Union of Public Employees contract, the normal work week was forty hours. All three contracts provided for a normal working day of eight hours.¹ As the study was to be an experiment of only fifteen weeks duration it was agreed by all participating parties (the employees, their union representatives, and hospital administrative staff) that the contract provisions could be exceeded.

The head nurses of the nursing units selected the twelve-hour work schedule because this schedule was preferred by the majority of the nursing staff in their respective units. All three union representatives approved the choice of work schedule and gave their full support for the study to proceed.

Sequence of Analysis

The report of this study is divided into four main sections. In Chapter II, literature pertinent to the variables under investigation is reviewed. Chapter III contains a detailed description of the research design and

¹This information was supplied by the Personnel Director of the hospital.

methodology; and in Chapter IV the data collected are analyzed, discussed, and conclusions drawn. In Chapter V a summary of the study is presented, and recommendations are made. Copies of the research instruments are contained in the Appendices.

CHAPTER II

SOME PERTINENT LITERATURE

The intent in this literature review is not that of an exhaustive analysis, but to create a perspective from which the variables under investigation may be viewed. The discussion will be confined to: (1) job satisfaction; (2) evaluation of nursing care by nurses, and by patients; (3) work schedules; and (4) costs related to staffing.

Job Satisfaction

Systematic surveys of the attitudes of employees to their work began in the 1920's and developed rapidly.¹ Many empirical studies of employee attitudes have since been conducted providing overwhelming evidence that job satisfaction is a multi-dimensional phenomenon. Robinson and Connors review job satisfaction studies conducted in 1962 and list over sixty factors which had been suggested by investigators as being either present or absent in

¹Robert Blauner, "Work Satisfaction and Industrial Trends in Modern Society," in Labor and Trade Unionism: An Interdisciplinary Reader, ed. by Walter Galenson, and Seymour Martin Lipset (New York: John Wiley and Sons, Inc., 1960), p. 340.

relation to job satisfaction.¹ The complexity of the phenomenon has by no means deterred social scientists from attempting to measure job satisfaction, or from trying to identify its many dimensions. Only selected highlights of this extensive literature are reviewed in the following sections, namely: (1) theoretical issues; (2) methodological issues; (3) selected correlates of job satisfaction; and (4) work satisfaction in nursing.

Theoretical Issues

Can job satisfaction be conceptualized in terms of a continuum? Traditional theorists would argue that it is logical to do so, and they assume that a linear relationship exists between satisfaction with specific job variables and overall job satisfaction.² The linearity assumption of traditional theorists was challenged by Herzberg, Mausner, and Snyderman³ whose "two-factor" theory has generated much

¹H. Allan Robinson, and Ralph P. Connors, "Job Satisfaction Researches of 1962," Personnel and Guidance Journal, 42 (October, 1963), pp. 136-37.

²George B. Graen, "Testing Traditional and Two-Factor Hypotheses Concerning Job Satisfaction," Journal of Applied Psychology, 52 (October, 1968), 366-371.

³Frederick Herzberg, Bernard Mausner, and Barbara Bloch Snyderman, The Motivation to Work (New York: John Wiley and Sons, Inc., 1959).

research, debate,¹ and criticism.² There are five distinct versions of Herzberg's "two-factor" theory.³ According to Herzberg, " . . . job satisfaction and job dissatisfaction represent two separate and distinct experiences, and not just the opposites of the same feeling."⁴ The term "two-factor" refers to two sets of variables, job content and job context variables. Job content variables refer to intrinsic aspects of the job such as specific tasks, recognition for work done, responsibility, and achievement. Job context variables refer to extrinsic aspects of the job over which the employee has little control, such as company policies, working conditions, and wages. An assumption is made that these two sets of variables contribute in different ways to overall job satisfaction.⁵

¹A series of four articles and a rebuttal were published by the following parties: Robert J. House, and Lawrence A. Wigdor, "Herzberg's Dual-Factor Theory of Job Satisfaction and Motivation: A Review of the Evidence and a Criticism," Personnel Psychology, 20 (Winter, 1967), 369-89; David A. Whitsett, and Erik K. Winslow, "An Analysis of Studies Critical of the Motivator-Hygiene Theory," Personnel Psychology, 20 (Winter, 1967), 391-415.

²Charles L. Hulin, "Review of Herzberg's 'Work and the Nature of Man,'" Personnel Psychology, 19 (Winter, 1966), 434-37.

³Nathan King, "Clarification and Evaluation of the Two-Factor Theory of Job Satisfaction," Psychological Bulletin, 74 (July, 1970), 18-31.

⁴Frederick Herzberg, "The New Industrial Psychology," Industrial and Labor Relations Review, 18 (April, 1965), p. 369.

⁵Graen, op.cit., p. 366.

Various theoretical approaches have been used for interpreting job satisfaction findings. For example Morse used a needs-gratification approach,¹ and the reference group theory was used by Form and Geschwender.² More recently, Smith, Kendall and Hulin have proposed that " . . . job satisfaction is an affective response to distinguished aspects of the job, evaluated in relation to appropriate frames of reference."³ Vroom, whose own theoretical approach to job satisfaction emphasizes the importance of the psychological needs of the worker, concludes that job satisfaction must be assumed to be the result of the operation of both situational and personality variables.⁴

In summary, it would appear that the traditional and two-factor theories tend to over-simplify the phenomenon of job satisfaction. The theoretical approaches of Vroom, and Smith et al. seem to offer more promise, but clearly job satisfaction is far from being fully understood. Locke

¹Nancy C. Morse, Satisfactions in the White-Collar Job (Ann Arbor: University of Michigan, 1953), p. 4.

²William H. Form, and James A. Geschwender, "Social Reference Basis of Job Satisfaction: The Case of Manual Workers," American Sociological Review, 27 (April, 1962), 228-237.

³Patricia C. Smith, Lorne M. Kendall, and Charles L. Hulin, The Measurement of Satisfaction in Work and Retirement: A Strategy for the Study of Attitudes (Chicago, Illinois: Rand McNally and Co., 1969), p. 87.

⁴Victor H. Vroom, Work and Motivation (New York: John Wiley and Sons, Inc., 1964), p. 173.

argues that our understanding of job satisfaction has been limited by a prevalent research policy of "correlation without explanation" in that " . . . the causes of job satisfaction are not in the job nor solely in man but lie in the relationship between them."¹ Contraversial as these theoretical issues are, they serve the important function of creating a perspective from which existing research findings may be interpreted, and of generating a more systematic approach to job satisfaction research.

Methodological Issues

One of the outstanding features of job satisfaction research is the inconclusive and contradictory nature of the findings. One possible reason for this is that " . . . if one wishes to measure some phenomenon accurately, one must first know what it is one wants to measure."² Fournet, Distefano and Pryer attribute the difficulty of relating the conflicting findings of job satisfaction studies to the variety of methods used for measuring work attitudes.³ Job satisfaction measures have ranged from

¹Edwin A. Locke, "What is Job Satisfaction?" Organizational Behavior and Human Performance, 4 (November, 1969), p. 319.

²Locke, op.cit., p. 313.

³Glenn P. Fournet, M. K. Distefano, Jr., and Margaret W. Pryer, "Job Satisfaction: Issues and Problems," Personnel Psychology, 19 (Summer, 1966), p. 166.

critical incident techniques,¹ paper and pencil inventories and scales,² to graphic projective scales.³ Critics of job satisfaction research note that frequently little attention is paid to problems of scaling, reliability, and validity of job satisfaction measures.⁴ Many studies are methodologically limited, particularly by the non-representativeness of sampling techniques.

Brayfield and Crockett critically review the literature on employee attitudes and employee performance and remark:

It is difficult to know whether inadequacies in research reports reflect faults in research design, or whether space limitations in journals force authors to omit a considerable part of the methodological detail of their studies.⁵

The most frequent statistical techniques used in job satisfaction research have been correlations and factor analysis.⁶ The results of factor analytic studies have led to the identification of many component factors of job

¹Herzberg et al., (1959), op.cit., p. 35.

²Delbert, C. Miller, Handbook of Research Design and Social Measurement, (New York: David McKay Co., Inc., 1964), pp. 173-193.

³Theodore Kunin, "The Construction of a New Type of Attitude Measure," Personnel Psychology, 8 (Spring, 1955), 65-77.

⁴Vroom, op.cit., p. 100.

⁵Arthur H. Brayfield, and Walter H. Crockett, "Employee Attitudes and Employee Performance," Psychological Bulletin, 52 (September, 1955), p. 409.

⁶Fournet et al., op.cit., p. 166.

satisfaction,¹ and the question of the predominance of a general factor has given rise to much discussion.² Yuzuk argues that evaluative inventories (such as the type of job satisfaction questionnaire that was used in this study) possess a large general bias factor, which reflect non-interpretable, diffuse employee attitudes.³ In addition to these unresolved issues, a controversy exists with regard to the estimation of overall job satisfaction. Evans contends that scores on component factors of job satisfaction should be weighted according to the importance of each component to the respondent,⁴ while others have argued that weighting the components does not appear to be warranted.⁵

The Job Descriptive Index (JDI) constructed by Smith et al. seems to be a major step forward in the development of a reliable and valid measure of job satisfaction.⁶

¹Melany E. Baehr, "A Factorial Study of the SRA Employee Inventory," Personnel Psychology, 7 (Autumn, 1954), 319-36.

²Robert J. Wherry, "An Orthogonal Re-rotation of the Baehr and Ash Studies of the SRA Employee Inventory," Personnel Psychology, 7 (Autumn, 1954), 365-80.

³Ronald Paul Yuzuk, The Assessment of Employee Morale (Columbus, Ohio: The Ohio State University, 1961), p. 33.

⁴Martin G. Evans, "Satisfaction with the Importance of Various Facets of the Job," Personnel Journal, 49 (September, 1970), 740-41, 773.

⁵Robert B. Ewen, "Weighting Components of Job Satisfaction," Journal of Applied Psychology, 51 (February, 1967), p. 73; Locke, op.cit., p. 331.

⁶Smith et al., op.cit., p. 30.

The JDI consists of five subscales based on factors which have consistently emerged from factor analytic studies namely, a general factor, pay and material rewards, work itself, a supervision factor, and relationships with other workers. Porter, applauding the work of these researchers notes:

For too many years we . . . have been plagued by inadequately conceived and poorly developed measuring devices. This has led to a plethora of studies each using a different scale or measuring instrument. As a consequence, this has opened the door for almost anyone to claim the solution for making sense of the jigsaw pattern of findings relating to job satisfaction.¹

Selected Correlates of Job Satisfaction

The results of research on the relationship between job satisfaction, and employee performance and productivity, are inconclusive.² Turnover of staff and absenteeism are negatively correlated with job satisfaction, although the relationship with the latter is less consistent.³

Few researchers have investigated the relationship between job satisfaction and work schedules per se, although many have investigated attitudes of workers to shift work.

¹Lyman W. Porter, in Smith et al., op.cit., p. vi.

²Brayfield and Crockett, op.cit., p. 408; Robert L. Kahn, "Productivity and Job Satisfaction," Personnel Psychology, 13 (Autumn, 1960), 275-87.

³Vroom, op.cit., p. 186.

Mann and Hoffman concluded that differences in workers' attitudes to shifts could be attributed to the differences in the specific work schedules used in two oil refineries.¹ With the exception of wages, a worker's satisfaction with shift work is generally unrelated to his other job satisfactions.² Shift work appears to be a facet of the job which produces dissatisfaction,³ but for a small minority of workers, shift work is preferred.⁴

By and large most workers report satisfaction with their work; an overall estimate of dissatisfied workers was reported by Robinson and Connors to be approximately 13 per cent.⁵ Tausky observes " . . . that what men actually expect--not desire--is apparently not too far different from what their jobs provide, at least in the majority of instances."⁶ Blauner maintains that what is of greater sociological interest is the fact that there are marked

¹Floyd C. Mann, and L. R. Hoffman, Automation and the Worker (New York: Henry Holt and Co., Inc., 1960), p. 111.

²Paul E. Mott, Floyd C. Mann, Q. McLaughlin, and Donald P. Warwick, Shift Work: The Social, Psychological and Physical Consequences (Ann Arbor: University of Michigan, 1965), p. 35.

³Ibid., p. 24.

⁴Ibid., p. 310.

⁵Robinson and Connors, op.cit., p. 137.

⁶Curt Tausky, "Work Satisfaction Among Nurses," in Spoke Design for Inpatient Care, Bright M. Dornblaser and Eugene B. Piedmont (Amherst, Mass: Public Health Service, Department of Health, Education and Welfare, 1969), pp. 105-106.

occupational differences in work attitudes. He suggests four factors which account for these differences: occupational prestige; the degree of control a worker can exert over his work situation; integrated work groups; and occupational communities.¹ It appears that the highest percentages of satisfied workers are generally found among businessmen and professionals,² and that it is among these same occupational groups that people may be found who have a great propensity for work, and for working long hours.³

There are occupational differences in the meaning that people attach to their work,⁴ and Taylor contends that satisfactions and dissatisfactions are disproportionately the function of perceived meanings in work.⁵ As a correlate of job satisfaction, meanings that people attach to their work seem to have been relatively unexplored.

¹Blauner, op.cit., pp. 343-52.

²Ibid., p. 341.

³Harold L. Wilensky, "The Uneven Distribution of Leisure: The Impact of Economic Growth on 'Free Time,'" Social Problems, 9 (Summer, 1961), pp. 37-45.

⁴For a more extensive discussion of this point see E. A. Freidmann, and R. J. Havighurst, "Work and Retirement," in Man, Work, and Society, ed. by Sigmund Nosow, and William F. Form (New York: Basic Books, Inc., 1962), pp. 41-55.

⁵Lee Taylor, Occupational Sociology (New York: Oxford University Press, Inc., 1968), p. 410.

Work Satisfaction and the Work Role of Nurses

In a survey of general staff nurses conducted in 1936, it was concluded that 20 per cent were dissatisfied. It was also reported that:

The middle nurse in a group of 2,370 staff nurses . . . receives a yearly cash salary of \$825 plus full maintenance; . . . works eight hours a day, which however are broken hours rather than a continuous eight-hour day; has time off amounting to one day a week; is notified about her hours off duty not as much as one day in advance; . . . is not allowed time off with pay for illness; . . . and finds general staff nursing satisfying work.¹

The hours of work and uncertainty of days off duty have been mentioned by nurses as a source of dissatisfaction in many job satisfaction studies.² Inactive nurses frequently select flexibility of scheduling, and choice of hours of work, as necessary conditions to induce them to return to work.³

It seems that much of the job satisfaction research in nursing has been motivated by a concern with high turnover rates of nurses in hospitals.⁴ The results of these

¹American Nurses' Association, "The General Staff Nurse: A study of General Staff Nurses in Eighteen States," American Journal of Nursing, 38 (November, 1938), p. 1221.

²E.g., L. K. Diamond, and David J. Fox., "Turnover Among Hospital Staff Nurses," Nursing Outlook, 6 (July, 1958), p. 389; Frank A. Noyes, "I Like-----:" A Study of Job Satisfaction and Dissatisfaction (Boston: Department of Mental Health, 1960), p. 157.

³Child care provisions and refresher courses are also listed as necessary conditions. See K. A. Archibald, The Supply of Professional Nurses and Their Recruitment and Retention by Hospitals (New York: The Rand Corporation, 1971), pp. 27-28.

⁴E.g., Joann S. Maryo, and Julian J. Lasky, "A Work Satisfaction Survey among Nurses," American Journal of Nursing, 59 (April, 1959), 501-503.

studies generally show that approximately two-thirds of the turnover is unavoidable being due mostly to family commitments, and that the remaining third is probably avoidable.¹ Wright found that there was not a great difference in the job satisfaction of nurses leaving their jobs and those who were staying, although those who left were generally more dissatisfied.² The significance of this finding is that although a critical degree of dissatisfaction may compel a nurse to leave, a lesser degree may inhibit high standards of practice.³

Facets of the work role which have been cited by nurses as satisfying include good working relationships,⁴ a chance to do interesting work, and to give good patient care.⁵ It is interesting to note however, that the nurse-patient relationship is a source of both satisfaction and anxiety for nurses.⁶

Conflicting aspects of the nurse's role have been well

¹Diamond and Fox, op.cit., p. 390: George F. Wieland, "Studying and Measuring Turnover," International Journal of Nursing Studies, 6 (No. 2, 1969), p. 67.

²Stuart Wright, "Turnover and Job Satisfaction," Hospitals, Journal of the American Hospital Association, 31 (October, 1st, 1957), p. 52.

³C. G. Costello, "Attitudes of Nurses to Nursing," Canadian Nurse, 63 (June, 1967), p. 42.

⁴Frank A. Noyes, op.cit., p. 159; Maryo and Lasky, op.cit., p. 502.

⁵Richard J. Simon, and Marian E. Olson, "Assessing Job Attitudes of Nursing Service Personnel," Nursing Outlook, 8 (August, 1960), p. 427.

⁶Archibald, op.cit., p. 72.

documented.¹ The anxieties of the work situation generated by the realities of physical and emotional illness,² are compounded by a three-fold obligation of nurses--to patients, to the medical staff, and to the administrative hierarchy. The hospital nurse has become amongst other things, physician's deputy, administrative representative, and general co-ordinator,³ and thus the rewards a nurse desires bear little relationship to the rewards the institution has to offer.⁴ Not only is the work role complex, but many nurses occupy multiple roles as wives and mothers. 46 per cent of full time nurses, and 84 per cent of part time nurses in Canada are married;⁵ of the fifty-eight nurses who were subjects in this compressed work week study, 70 per cent were married.

It has been said that most women work to supplement

¹Kenneth D. Benne, and Warren Bennis, "Role Confusion and Conflict in Nursing," American Journal of Nursing, 59 (February, 1959), 196-199; Ronald G. Corwin, "The Professional Employee: A study of Conflict in Nursing Roles," American Journal of Sociology, 66 (March, 1961), 604-15; Miriam Ritvo, and Claire Fisk, "Role Conflict," American Journal of Nursing, 66 (October, 1966), 2248-51.

²Isabel E. P. Menzies, "A Case-Study in the Functioning of Social Systems as a Defense against Anxiety," Human Relations, 13 (May, 1960), pp. 97-98.

³Hans O. Mauksch, "The Organizational Context of Nursing Practice," in The Nursing Profession: Five Sociological Essays, ed. by Fred Davis (New York: John Wiley and Sons, Inc., 1966), p. 122.

⁴Benne and Bennis, op.cit., p. 197.

⁵Canadian Nurses' Association, Countdown 1970: Canadian Nursing Statistics (Ottawa: Canadian Nurses' Association, 1970), p. 12.

family incomes,¹ but even if this statement is not entirely valid, a "cultural mandate" of our society requires women to commit themselves first to their families and second to their work.² It would seem that remedial efforts of nursing administrators to reduce turnover and to attract inactive nurses back to work must include a reconsideration of the social, psychological and economic rewards that the institution has to offer.

Job satisfaction research in the area of nursing has been inadequate, from both theoretical and methodological standpoints. Rather than to continue the search for satisfying and dissatisfying facets of the job, a more intensive analysis of the nurse's role seems to be needed, and the identification of continuing education needs of the nurse, so that she may be prepared to cope with a complex work role.

Evaluation of Nursing Care

Evaluation of nursing care is generally regarded in the nursing profession as a difficult and complex problem. Some of the difficulties of evaluating nursing care in terms of quality stem from the problem of delineating defensible

¹Wilensky, op.cit., p. 55.

²Rose L. Coser, and Gerald Rokoff, "Women in the Occupational World: Social Disruption and Conflict," Social Problems, 18 (Spring, 1971), p. 538.

criterion measures,¹ and from the lack of precise instruments for measuring the effects of nursing practice upon patient care.² Implicit in any judgment of quality are criteria and standards,³ and although nurses have been urged to develop standards for nursing care,⁴ very limited progress has been made.⁵ Some standards have been developed which provide guidelines for the promotion of efficiency in hospital nursing departments, and which are also used for accreditation purposes.⁶ These standards are stated in broad terms and may be useful for evaluating nursing care

¹Rozella M. Schlotfeldt, "Problems in the Development of Adequate Criteria," Nursing Research, 11 (Fall, 1962), 211-13.

²Faye G. Abdellah, "Overview of Nursing Research 1955-1968, Part I.," Nursing Research, 19 (January-February, 1970), p. 15

³Avedis Donabedian, "Part II--Some Issues in Evaluating the Quality of Nursing Care," American Journal of Public Health, 59 (October, 1969), p. 1834.

⁴Task Force Reports on the Cost of Health Services in Canada, Vol. II, Hospital Services (Ottawa: Queen's Printer, 1969), p. 157.

⁵In a notable survey sponsored by the Canadian Nurses' Association, it was found that none of the sample of twelve hospital nursing departments across Canada had any specific objectives, criteria or standards by which nursing care could be evaluated. Canadian Nurses' Association, A Report on the Project for the Evaluation of the Quality of Nursing Service (Ottawa: Canadian Nurses' Association, 1966), p.57.

⁶Canadian Council on Hospital Accreditation, Hospital Accreditation Guide Compendium (1967), pp. 133-37. See also American Nurses' Association, "Standards for Organized Nursing Service," American Journal of Nursing, 65 (March, 1965), 76-79.

from a structural standpoint,¹ but attempts to set standards for evaluating the process and/or outcomes of nursing care have been few and sporadic.²

A structural approach to the evaluation of nursing care involves the appraisal of such aspects of nursing as: philosophy and objectives; the organization of nursing services; and the performance of nursing personnel. The major assumption of this approach is that if the nursing department meets certain specified standards, then good nursing care is likely to follow.³ The distinction between nursing process and nursing outcome is to some extent an abstraction,⁴ but for evaluation purposes it is useful to make the distinction. Nursing process refers to the primary function of nurses, i.e., the direct care of patients, and nursing outcomes refer to the end results of care, " . . . usually specified in terms of patient health, welfare, and satisfaction."⁵

¹The available approaches to evaluation of nursing care have been classified under three headings--structure, process and outcomes by Donabedian, op.cit., p. 1833.

²For example, see Myrtle K. Aydelotte, "The Use of Patient Welfare as a Criterion Measure," Nursing Research, 11 (Winter, 1962), 10-14.

³Donabedian, op.cit., p. 1833.

⁴Ibid., p. 1844.

⁵Ibid., p. 1833.

Selected Methods of Evaluating Nursing Care

The literature indicates that the most frequently used research techniques for assessing nursing care include interviews with hospital staff and patients, and direct observation of the nursing process.¹ Historically, observation has been the single method of evaluating nursing care used by supervisors and head nurses on their daily rounds. The shortcomings of observation as a research method are well known,² because as Florence Nightingale remarked: " . . . there is the want of observation simple, and the want of observation compound, compounded, that is, with the imaginative faculty."³ A recently developed method of evaluating the nursing process known as "Qualpacs" relies entirely upon observation by an expert nurse as the means of assessment.⁴ Limited though assessment by observation may be, in the absence of precise alternatives, it would seem to be a logical first step toward evaluating nursing process.

¹All three of these techniques were used in the previously mentioned study of the Canadian Nurses' Association, op.cit., p. 31.

²An excellent discussion of the methodological limitations of direct observation can be found in Gideon Sjoberg, and Roger Nett, A Methodology for Social Research (New York: Harper and Row, 1968), Ch. VII.

³Florence Nightingale, Notes on Nursing (London: Harrison and Sons, 1859, facsimile reproduced by J. B. Lippincott Company, Philadelphia, 1946), p. 60.

⁴Mabel A. Wandelt, and Joel Ager, Quality Patient Care Scale (Detroit: College of Nursing, Wayne State University, 1970).

Approaches to the assessment of nursing outcomes tend to be unidimensional, focussing on one aspect of nursing care supposed to reflect quality. Examples of single-component methods of evaluating nursing outcomes are: review of medication errors; irregular incident reports; family and patient complaints; and the nursing audit.^{1,2} The nursing audit is a retrospective review of the nursing section of the patient's medical record, the assumption being that what is revealed in the records reflects the quality of nursing care given. This would seem to be a tenuous assumption since many factors influence nursing care which are not necessarily recorded in the patient's chart. In view of the findings of Walker and Selmanoff that nurses' notes tend to be ritualistic in nature, incomplete and inaccurate,³ the nursing audit would seem to be a useful tool for remedial action on one dimension of nursing care.

Questionnaires and interviews seem to be the most widely used methods for assessing patients' satisfaction with nursing care. A questionnaire which has been widely used in the United States was constructed by Abdellah and

¹Pearl Fisher, "The Nursing Audit," Nursing Outlook, 5 (October, 1957), 590-92.

²Maria C. Phaneuf, "A Nursing Audit Method," Nursing Outlook, 12 (May, 1964), 42-45.

³Virginia H. Walker, and Eugene D. Selmanoff, "A Study of the Nature and Uses of Nurses' Notes," Nursing Research, 13 (Spring, 1964), 113-121.

Levine,¹ and this was the instrument selected to measure patients' satisfaction with nursing care in this study. According to Blumberg and Drew, patients should not be asked to judge but to report incidents that occurred,² and this is precisely what the Abdellah and Levine questionnaire requires the respondent to do--to report whether or not certain incidents occurred.

A method of evaluating selected facets of both nursing process and nursing outcomes was developed by the Commission for Administrative Services in Hospitals (C.A.S.H.), in California.³ This method known as the Quality Control Plan, involves direct observation of the patient and his environment, and examination of the nursing records. The instrument used in this study to measure selected characteristics of nursing care, was based on many of the items from the Quality Control Plan.

An encouraging development in clinical nursing research is the investigation of the relationship between nursing process and nursing outcomes. For example, Dumas and Leonard investigated the effect of nursing interaction

¹Faye G. Abdellah, and Eugene Levine, "Developing a Measure of Patient and Personnel Satisfaction with Nursing Care," Nursing Research, 5 (February, 1957), 100-108.

²Mark S. Blumberg, and Jacqueline A. Drew, "Methods for Assessing Nursing Care Quality," Hospitals, Journal of the American Hospital Association, 37 (November, 1st, 1963), pp. 72.

³Robert, H. Edgecumbe, "How C.A.S.H. Helps Nurses Improve Care," Modern Hospital, 106 (May, 1966), 97-99.

on the incidence of post-operative vomiting.¹ It has been demonstrated that certain social interactions between nursing staff and patients, can have various predictable effects on the psychological and physiological state of patients.² These studies are important contributions towards developing criteria for evaluating nursing practice, and such studies can help us ultimately to clarify the role of the professional nurse.³

Patients as Respondents

Patients are a potentially valuable source of information with regard to the quality of nursing care they have received, but they tend to be reluctant critics. It has been observed that in spite of the prerogatives of sick people, patients feel obligated to be "good,"⁴ and they hesitate to volunteer constructive criticism because they feel

¹Rhetaugh G. Dumas, and Robert C. Leonard, "The Effect of Nursing on the Incidence of Postoperative Vomiting," Nursing Research, 12 (Winter, 1963), 12-15.

²Robert C. Leonard, James K. Skipper, Jr., and Powhatan J. Wooldridge, "Small Sample Field Experiments for Evaluating Patient Care," Health Services Research, 2 (Spring, 1967), 46-60; James K. Skipper, Jr., and Robert C. Leonard, "Children, Stress, and Hospitalization: A Field Experiment," Journal of Health and Social Behavior, 9 (December, 1968), 275-286.

³For example, see Faye G. Abdellah, "Criterion Measures in Nursing," Nursing Research, 10 (Winter, 1961), p. 22.

⁴Daisy L. Tagliacozzo, "The Nurse from the Patient's Point of View," in Social Interaction and Patient Care, ed. by James K. Skipper, Jr., and Robert C. Leonard (Philadelphia: J. B. Lippincott Co., 1965), pp. 219-27.

strong gratitude and they fear repercussions.¹ Various investigators have found that the majority of patients report satisfaction with their nursing care.² It is interesting to note, however, that it was the prevalence of complaints about nursing care from patients and personnel which led to the development of the Abdellah and Levine questionnaire.³ After interviewing over 700 patients who had returned to their own homes, Cartwright concluded that while most patients were grateful for the way nurses had looked after them, dissatisfaction in the minority stemmed from three sources: the unreasonably critical or demanding patient; the occasional unsympathetic or inadequate nurse; and unsatisfactory working conditions for nurses.⁴

Abdellah maintains that the welfare of patients is the most relevant criterion measure for assessing changes in nursing practice,⁵ so that questioning patients about their nursing care would seem to be a logical approach to the evaluation of any such changes. Rosengren and Lefton have

¹Winnifred Raphael, "Do We Know what the Patients Think?" International Journal of Nursing Studies, 4 (No. 3, 1967), p. 209.

²Raymond S. Duff, and August Hollingshead, Sickness and Society (New York: Harper and Row, 1968), p. 230: Raphael, op.cit., p. 213.

³Abdellah and Levine, (1957), op.cit., p. 100.

⁴Ann Cartwright, Human Relations and Hospital Care (London: Routledge and Kegan Paul, Ltd., 1964), p. 45.

⁵Abdellah, (1970), op.cit., p. 12.

pointed out that: " . . . hospitals are organizations in which the collaboration--or at least the passive acquiescence--of the client is most mandatory in the delivery of the service,"¹ and although this may be true in part, it would seem to indicate that patients are not generally encouraged to exercise their independent judgment with regard to their care and treatment. Even if patients are reluctant to criticize the health service while in hospital, as consumers and taxpayers we can expect them to be more critical and less "acquiescent" as health care services absorb a rising proportion of our national resources.²

In summary, the efforts of nurses to evaluate their services to patients have been piecemeal, and hindered by lack of precise instruments for measuring nursing care directly. While it seems reasonable to assume that the nursing profession will continue to develop methods of evaluating its own specific contribution to patient care, a broader methodological approach is needed which would perhaps use systems models to encompass the patient's total hospital care episode.³

¹William R. Rosengren, and Mark Lefton, Hospitals and Patients (New York: Atherton Press, Inc., 1969), p. 16.

²Economic Council of Canada, Seventh Annual Review: Patterns of Growth (Ottawa: Queen's Printer, 1970), pp. 52-53.

³For an example of this kind of approach, see Gerald Nadler, and Vinod Sahney, "A Descriptive Model of Nursing Care," American Journal of Nursing, 69 (February, 1969), 336-41.

Work Schedules

The regular hours of work in the United States have declined over the last century, and since 1950 they have stabilized at forty per week and eight per day.¹ In Canada, average weekly standard hours of work declined from 58.6 hours in 1901, to 41.6 hours in 1965.² The five-day work week has been a long established practice, but recently the regular hours of work of many employees have been redistributed so that the work day has been extended, and the work week reduced to three or four days. This "compressed" type of work week has been in effect for over thirty years in certain industries, but a trend to convert to such work schedules was first identified in 1970.³ By November 1971, companies in the United States were reported to be converting to compressed work week schedules at the rate of two per day.⁴ A survey of 150 companies in Canada in 1971, revealed that seventeen of them had implemented compressed

¹Gordon F. Bloom, and Herbert R. Northrup, Economics of Labor Relations (6th ed.; Homewood, Ill: Richard D. Irwin, Inc., 1969), p. 470.

²S. M. A. Hameed, "Economic and Institutional Determinants of the Average Work Week," in Work and Leisure, ed. by S. M. A. Hameed, and D. Cullen (Edmonton: University of Alberta, 1971), p. 5.

³Riva Poor, ed., 4 Days, 40 Hours: Reporting a Revolution in Work and Leisure (Cambridge, Mass: Bursk and Poor, 1970), Ch. I.

⁴John Schreiner, "Short Week Gaining Ground," The Financial Post, (November 13, 1971), p. 1.

work week patterns.¹

Implementing a compressed work week schedule usually involves a simple redistribution of the regular hours of work, but in some cases, the total number of hours worked is reduced with a concomitant decrease in annual earnings and fringe benefits.² Redistributing the hours of work in either case would seem to be contrary to the general aims of organized labour. One of the objectives of organized labour has been to strive for a reduction in the total number of hours worked per day, and/or per week, with compensatory wage adjustments to maintain income.³ It has been suggested, however, that the compressed work week is a logical step toward achieving this labour objective of a shorter work week.⁴

Many advantages and disadvantages of the compressed work week have been listed for both management and employees. Management claims that with a compressed work week, employees' morale and efficiency increase, and absenteeism

¹Taimi Metsasalu, and Gordon F. Harrison, "The Shortened Work Week: Canadian Trend or a Fad?" Canadian Personnel and Industrial Relations Journal, 18 (November, 1971), p. 20.

²Shift workers at a Winnipeg refinery converted to a work week of three twelve-hour shifts in 1971. Average hours worked per week fell from 40 to 38.8, and workers accepted a 3 per cent reduction in wages and benefits, as part of the agreement. See "The Four-Day Weekend," Esso Reporter, 7 (January, 1971), p. 10.

³Bloom and Northrup, op.cit., p. 483.

⁴Linda Sprague, "Fewer Days or Fewer Hours?" in 4 Days, 40 Hours: ed. by Poor, op.cit., p. 53.

decreases; workers favour more consecutive free time, and less travelling to and from work. Disadvantages for management include problems with the scheduling of three shift operations, while union spokesmen cite fatigue, erosion of labour standards, and health hazards as unfavourable aspects of compressed work week patterns.¹ Few experiments with compressed work weeks have been conducted so far in Canadian hospitals. Productivity and efficiency are difficult to measure in the health field, and unless new work week schedules can be introduced without increasing personnel costs, it seems unlikely that hospital boards will favour the implementation of these kinds of schedules.

Nursing Work Schedules

In the 1936 survey mentioned earlier, two-thirds of the nurses reported that they did not know their hours of work as much as a day in advance.² It appears that the scheduling of nurses' hours of work has become increasingly systematic during the last two decades. Master rotation plans were introduced in the 1950's, and were adopted in the 1960's under the title of cyclic schedules. A cyclic schedule is a fixed, repeating work schedule, from which nurses

¹W. Hunter Simpson; Jacob Clayman, and Thomas Hannigan, "The 4-40 Workweek: Two Views," Manpower, 4 (January, 1972), 14-19.

²American Nurses' Association, (1938), op.cit., p. 1223

may ascertain their hours of work several weeks in advance.¹

A major issue since the widespread use of a three-shift system for hospital nurses,² has been the problem of who should work the "deviant" shifts. Those in favour of nurses rotating from one shift to another at varying intervals argue that it ensures an equitable distribution of the unpopular shifts,³ and that it costs less because fewer people are needed.⁴ Those who oppose the system of rotating shifts argue that unless nurses volunteer for unpopular shifts, they should not be required to subject themselves unnecessarily to the physiological, psychological and social disruptions that shift work entails.⁵ The disadvantages of shift work provide a strong argument against the implementation of compressed work week schedules. Mann reviews the

¹Elmina Price, "Techniques to Improve Staffing," American Journal of Nursing, 70 (October, 1970), p. 2115.

²The system of three eight-hour shifts per twenty-four hours was in use in the majority of hospitals in the United States by 1943. See American Nurses' Association, "Eight-hour Day in Hospitals," American Journal of Nursing, 43 (April, 1943), 366-68. Prior to this date, night shifts for nurses were eleven to twelve hours in length, and day shifts were generally eight hours, but these eight hours were not necessarily consecutive hours of work. A work schedule which requires a nurse to go to work twice in one day has been rather aptly called "the iniquitous splits." See E. Astley, "Doing the Splits," Nursing Mirror, 130 (January 16, 1970), p. 16.

³Price, op.cit., p. 2113.

⁴Cited by Paul E. Mott, "The Case Against Rotating Shifts," Nursing Outlook, 14 (April, 1966), p. 52.

⁵Ibid., p. 51.

research on shift work and suggests that some of the disadvantages could be reduced if personnel work a fixed shift work schedule, and a shorter day.¹

There are many difficulties in designing an equitable schedule which makes efficient use of nursing personnel, but these difficulties may be partly overcome in the near future by wider use of computer services.² The concern of operational researchers with efficient utilization of nurses has led to the consideration of linear programming of nursing resources,³ but it remains to be seen if these relatively sophisticated, abstract models will provide assistance to nursing service administrators who still have to cope with the human relations problems arising from equitable shift allocation, and job satisfaction among nursing staff.

Nursing Staff Costs

In Canadian hospitals, personnel budgets amount to approximately 70 per cent of hospital operating costs, and it is estimated that 50 per cent of the personnel budget is

¹Floyd C. Mann, "Shift Work and the Shorter Workweek," in Hours of Work, ed. by Clyde E. Dankert, Floyd C. Mann, and Herbert R. Northrup (New York: Harper and Row, 1965), p. 126.

²Arthur R. Morrish, and Anna R. O'Connor, "Cyclic Scheduling," Hospitals, Journal of the American Hospital Association, 44 (February 16, 1970), 67-71.

³Harvey Wolfe, and John P. Young, "Part II. The Multiple Assignment Technique," Nursing Research, 14 (Fall, 1965), 299-303.

taken up by the nursing service department.¹ Concern with costs of staffing and with the optimum utilization of the nurse has motivated much research into staffing patterns, and the development of techniques for predicting nursing work loads,² but methods of scheduling the hours of work of nurses have received very little attention as a potential cost variable.

Some of the indices used to evaluate new staffing patterns include: turnover rates; sickness rates; absenteeism;³ and relief staff needs.⁴ If change is observed in any one of these items, it is usually interpreted in a behavioural context rather than in terms of the relevancy of the item to costs of staffing. Probably the reason that this approach is taken is because very detailed analyses of reasons for absenteeism and turnover would be necessary in order to establish relationships between these indices and new staffing patterns, particularly on a short run basis.

¹J. A. K. MacDonell, "Productivity Standards for Patients' Needs," in Task Force Reports, op.cit., p. 229.

²G. W. Torrance, "Operations Research Applied to Health Care Programs," in Methods of Health Care Evaluation, ed. by David L. Sackett, and Marjorie S. Baskin (Hamilton, Ontario: McMaster University, 1971), Ch. X, p. 6.

³Sister Mary Cecilia Eagen, "New Staffing Pattern Allows for Total Individual Quality Care," Hospital Progress, 51 (February, 1970), 62-64, 70.

⁴K. G. DeMarsh, and E. K. McLellan, "Nurses Sold on Shortened Work Week," Canadian Hospital, 48 (November, 1971), 64-66.

Summarizing the findings of a cyclic scheduling project, Price reported that costs on experimental nursing units "improved", but that there were no differences in absences and turnover of staff between experimental and control units.¹ Nurses spent less time in maintaining and planning the cyclic schedules, but this latter finding probably represents better utilization of nursing time rather than a savings in cost.

In conclusion, the literature on costs of staffing in relation to nursing work schedules is very sparse indeed. Indices assumed to reflect changes in costs of new staffing patterns should be examined carefully in terms of their relevance to the experimental situation.

Summary of the Literature Review

A major part of the literature reviewed in this chapter has been concerned with the theoretical and methodological problems of the measurement of job satisfaction. It can readily be discerned that the attitudes of people to their work are not determined by any one factor. It would seem that work satisfactions perceived by the hospital nurse are derived primarily from direct care of patients, but a conflicting set of obligations is imposed upon her by the nature of the organizational context in which she works.

¹Elmina M. Price, Staffing for Patient Care: A Guide for Nursing Service (New York: Springer Publishing Co., 1970), p. 152.

The available techniques for measuring both work satisfaction of the nurse, and the quality of nursing care are, as yet, not well developed; evidence which supports the general (but questionable) assumption that the satisfied worker is an effective worker must be treated with caution.

The literature indicates that until fairly recently, little attention has been paid to the work schedules of nursing staff, and few experiments involving a change of working hours have been conducted. This study was designed to investigate a specific type of work schedule for nursing staff; the methodology employed is described in the following chapter.

CHAPTER III

METHODOLOGY

The Research Design

It was stated in Chapter I that this study was a field experiment, designed to test a change of work schedule of nursing staff in three nursing units of a general acute hospital. Two very probable sources of internal invalidity in a field experiment of this kind are the novelty and the disruptive effects of the experimental situation. Although little can be done to control " . . . the enthusiasm or disruption generated by the newness of the treatment . . . ,"¹ it may be possible to identify the existence of such extraneous variables by using a quasi-experimental research design.² Figure 1 is a graphic representation of the quasi-experimental design used in this study.

The experiment was designed to take place over a fifteen week period in three nursing units--one control unit (CU) and two experimental units (EI and EII). In EI, the compressed work week schedule was used for the whole fifteen

¹Glenn H. Bracht, and Gene V. Glass, "The External Validity of Experiments," American Educational Research Journal, 5 (November, 1968), p. 439.

²Donald T. Campbell, and Julian C. Stanley, Experimental and Quasi-Experimental Designs for Research (Chicago: Rand McNally and Co., 1963), p. 34.

Control Unit (CU)	O_1		O_2		O_3		O_4
Experimental Unit I (EI)	O_1	X	O_2	X	O_3	X	O_4
Experimental Unit II (EII)	O_1	X	O_2		O_3	X	O_4

Key: O - Observation periods occurring at five week intervals.
 X - Experimental variable i.e., the compressed work week schedule.

Figure 1.--The Research Design

week period. The experimental and regular work schedules were alternated after each five week interval in EII.

There were four testing periods at five week intervals, the first of which (O_1) was the pretest. O_2 and O_3 took place just before the changes of schedule in EII, and O_4 was the final testing period. It was believed that data obtained under these four sets of conditions created by this research design would assist in the identification of the existence of novelty and/or disruptive effects. For example, assume that job satisfaction is measured in all three nursing units at O_1 , and again at O_2 after nurses in EI and EII have worked five weeks of the new schedule. If job satisfaction has increased in EI and EII and remained constant in the CU, one could not attribute the change in attitudes to the experimental variable, because such a change might be due to the excitement or the novelty of participation in the study. If job satisfaction is measured again at O_3 after nurses in EII have reverted to their regular schedule for five weeks, and job satisfaction is still higher in EI and EII and constant in the CU, then one could begin to suspect that novelty and/or disruptive effects existed. If however, job satisfaction in EII has decreased to its pretest level at O_3 , it would be reasonable to suspect that increased job satisfaction in EI was a function of the experimental variable.

The Independent Variable

The particular work schedule by which nursing staff work six twelve-hour shifts and one eight-hour shift in a two week period, was the independent (experimental) variable in this study. This work schedule was simply a redistribution of the regular bi-weekly eighty hours of work.

Dependent Variables

There were five dependent variables in this study: patient satisfaction; selected characteristics of nursing care; work satisfaction of nursing staff; selected fixed costs of staffing; and selected variable costs of staffing.

The Nursing Population

This study was restricted to general medical and general surgical units because it was thought that patients would be able to participate more readily than if acute care units or specialized units were used. It was thought also that general medical and surgical units would be reasonably comparable in terms of the type of nursing care practised, i.e., general nursing care vis-à-vis the highly technical nursing care practised in specialized areas.

To enhance internal validity, invitation to participate in the study was extended to units in which the following variables could be held constant throughout the experiment: head nurse, type of service, total bed capacity, unit organization (i.e., supply systems), and presence

of nursing students.¹ Eight nursing units met the above criteria and the staff of seven of the units volunteered to take part in the experiment; the accessible nursing population in this study consisted of the nursing staff of these seven units.² The proportion of nurses in each unit favouring the new schedule ranged from 51 per cent to 79 per cent, and the three units with the greatest percentage of nurses in favour were selected by the Director of Nursing Service. Thus the sample of fifty-eight female nursing personnel, 70 per cent of whom were married, were non-randomly selected, and positively biased at the start of the study. It was expected that results obtained would very likely be directionally in favour of the experimental schedule.

The nursing units consisted of one 35-bed general surgical unit and two general medical units, one with twenty-two beds and the other with thirty-five beds; a detailed description of the units is summarized in Table 1. There appeared to be no optimal solution to the problem of allocating these hospital units to the research units. Therefore the head nurses mutually agreed that their units would be assigned as follows: the CU: 35-bed surgical unit, EI:

¹Change in any one of these structural aspects of a social unit, according to Watson's theory mentioned in Chapter I, p. 5, can be expected to exert its own influence on process and attitudes, thus confounding the effects of the experimental variable.

²Accessible population refers to the population of subjects available to the researcher. See Bracht and Glass, op.cit., p. 440.

TABLE 1
CHARACTERISTICS OF THE THREE RESEARCH UNITS

Characteristic	CU	EI	EII
<u>Nursing Unit</u>			
Type of Service	General Surgery	General Medicine	General Medicine
Number of Beds	35	22	35
Type of Accommodation	Private, semi-private and public	Private and semi-private	Private, semi-private and public
Sex of Patients	Male and Female	Female	Male and Female
<u>Nursing Staff</u>			
Head Nurses	1	1	1
Assistant Head Nurses*	1	-	1
Registered Nurses - full time	10	7	9
Registered Nurses - part time	1	2	2
Certified Nursing Aides	6	7	8
Hospital Assistants	2	1	1
Ward Clerks**	1	1	1
Relief Ward Clerks***	1	1	2
Nursing Orderlies****	1	-	1

* Shared on the evening shift with an adjacent nursing unit.

** Ward Clerks worked on the day shift only.

*** The second relief ward clerk in EII worked on the evening shift when the Assistant Head Nurse was off duty.

**** A Nursing Orderly was assigned to the CU and to EII on all three shifts, but on the evening and night shifts each orderly was shared with an adjacent nursing unit.

22-bed medical unit, and EII: 35-bed medical unit.

Prior to the study, one nurse from EI and two nurses from EII asked to be transferred to other parts of the hospital because family commitments did not permit them to work extended shifts. These nurses were replaced by nurses from within the hospital who were familiar with the experimental units and who wished to take part in the study.

The three head nurses established some basic criteria to serve as guidelines for the design of the two new schedules. It was agreed that: (1) no nurse would work more than four consecutive twelve-hour shifts; (2) the schedules would meet the basic quota of Registered Nurses and Certified Nursing Aides needed to provide safe nursing care throughout the twenty-four hours of the day; (3) nurses working permanently on either night or evening shift would continue their normal work pattern; and (4) the hours of work of part-time nurses would remain the same. From a methodological standpoint, it was thought that to change the permanent shift patterns of nurses in (3) and (4) above would constitute a more radical change than a simple redistribution of hours of work.

The cyclic scheduling concept referred to in Chapter II,¹ was used in designing the two new schedules. Owing to criteria (3) and (4) above, considerable overlapping of

¹Elmina M. Price, Staffing for Patient Care: A Guide for Nursing Service (New York: Springer Publishing Co., 1970), Ch. V.

shifts occurred, and so a work sheet had to be developed to ensure that the entire twenty-four hour period was adequately staffed.¹ Tables 2 and 3 show the two new schedules for EI and EII respectively. Table 4 shows a two-week sample of the regular schedule worked in EII during the middle five weeks of the study.

The Patient Population

The target patient population for this study was a hypothetically large population of patients who might have been nursed in the three research units during the study.² The accessible population consisted of approximately 400 patients who were either inpatients at the time of the pretest, or who were admitted to the three nursing units during the course of the fifteen week study. From this population two sets of patients samples were drawn: (1) all patients well enough to complete a Patient Satisfaction Questionnaire, selected by the head or deputy head nurses at each testing period; (2) patients selected at random at each testing period, by the investigator for the purpose of observing selected characteristics of nursing care.

¹The work sheet is included in Appendix IV.

²Target population refers to the population to which one tentatively hopes to make generalizations. See Bracht and Glass, op.cit., p. 440.

TABLE 2
CYCLIC CONCEPT UNDERLYING THE NEW SCHEDULE
FOR EXPERIMENTAL UNIT I

Nursing Staff		Week Day													
		S	M	T	W	T	F	S	S	M	T	W	T	F	S
Head Nurse	A				D8	D	D8	D	D			D	D8	D8	
RN	B	N	N	N						N	N	N			N8
RN (part time)	C				N8	N8							N8	N8	
CNA	D		N8	N	N			N	N	N	N				
CNA	E	N			D	D	D8						D	N	N
RN	F	E			E	E	E8						E	E	E
RN (part time)	G		E8	E8				E8	E8			E8	E8		
Hospital Assistant	H					D	D	D	D8			D	D	D	
Rotation for five RNs	1	D	D	E						D	D	D8			D
	2	D				D	D					D	D8	D	D
	3			D8	E	E			E	E	E	E			
	4		D	D	D			D	D8	D	D				
	5		D	D			N	N	N				D	E8	
Rotation for five CNAs	1			D8	D	N	N				D	D			D
	2	D	E8			D	D						D	D	D
	3					D8	D	D	D			D	D	D	
	4		D8	D	D			D	D	D	D				
	5	N		D	D					D	D8	N	N		

Key: RN - Registered Nurse
CNA - Certified Nursing Aide

Note: Every person from A to H repeats the same two-week schedule continuously. Five RNs and five CNAs rotate through all lines of their respective schedules in numerical sequence, i.e., 1 to 2 to 3, etc.

N - 1915 - 0730 hours
N8 - 2315 - 0730 "
D - 0715 - 1930 "
D8 - 0715 - 1530 "
E - 1115 - 2330 "
E8 - 1515 - 2330 "

TABLE 3

CYCLIC CONCEPT UNDERLYING THE NEW SCHEDULE
FOR EXPERIMENTAL UNIT II

53

Nursing Staff		Week Day													
		S	M	T	W	T	F	S	S	M	T	W	T	F	S
Head Nurse	A			D	D	D				D	D	D	D8		
Assistant Head Nurse	B	E			E	E	E						E8	E	E
RN	C	N	N	N	N				N8	N	N				
RN (part time)	D						N8	N8				N8	N8		
CNA	E		N	N	N8			N	N	N	N				
RN (part time)	F						E8	E8	E8		E8	E8	E8		
CNA	G		E	E	E8			E	E	E	E				
CNA	H	E			E	E	E						E8	E	E
Hospital Assistant	I					D	D8	D	D			E	E	E	
Ward Clerk	J		D	D8	D8			D	D8		D8	D	D		
Relief Ward Clerk	K	D8				D8	D8			D8				D8	D8
Rotation for eight RNs	1	D		N	N	N							D8	N	N
	2		D	D	D			D	D8				D	D	
	3					N	N	N	N			D	D	D8	
	4			D	D	D	D8				D	D			D
	5	D	D	D8						N	N	N			D
	6	D	D			D	D			D	D	D8			
	7	N8	N				D	D	D				N	N	
	8				D	D		D8	D	D				D	D
Rotation for five CNAs	1	D	D				D	D	D				D	D8	
	2					D	D	D	D8			N	N	N	
	3			D	D8	N	N					D	D		N
	4	N			D	D8				D	D	D			D
	5	D	D	D8						D	D			D	D

Key: RN - Registered Nurse
CNA - Certified Nursing Aide

Note: Every person from A to K repeats the same two-week schedule continuously. Eight RNs and five CNAs rotate through all lines of their respective schedules in numerical sequence, i.e., 1 to 2 to

N - 1915 - 0730 hours
N8 - 2315 - 0730 "
D - 0715 - 1930 "
D8 - 0715 - 1530 "
E - 1115 - 2330 "
E8 - 1515 - 2330 "

TABLE 4

A TWO-WEEK SAMPLE OF THE REGULAR SCHEDULE
FOR EXPERIMENTAL UNIT II

Nursing Staff		Week Day													
		S	M	T	W	T	F	S	S	M	T	W	T	F	S
Head Nurse	A		D	D	D		D	D	D	D		D	D	D	
Assistant Head Nurse	B	E	E		E	E	E			E	E	E		E	E
RN	C	N	N	N	N	N	N			N	N	N	N		
RN (part time)	D							N	N					N	N
CNA	E	N	N	N	N			N	N	N	N	N	N	N	
RN (part time)	F		E		E	E				E	E				E
CNA	G	E	E			E	E	E	E	E		E	E	E	
CNA	H		E	E	E		E	E	E	E	E			E	E
Hospital Assistant	I	D		D	D	D	D			D	D	D	D		D
Ward Clerk	J	D	D		D	D	D			D	D	D	D		D
Relief Ward Clerk	K			D			D	D	D	D				D	
RNs	1	E	E		E	E	E			E	E	E		E	E
	2	E			D	D	D	D	D		D	D	D	D	
	3			E	E	E	E	E	E			D	D	D	D
	4	D	D		D	D	D				E	E	E	E	E
	5	D	D	D			D	D	D	D			D	D	
	6		D	D	D	D		D	D	D	D			D	D
	7	D	D	D		D	D			D	D	D	D		D
	8	D		D	D	D	D			D	D	D		D	D
CNAs	1	D	D		D	D	D			D	D	D		D	D
	2	E		D	D	D	D			D	D	D	D		N
	3		D	E	E	E		D	D			D	D	D	D
	4	D	D	D	D			D	D	D	E	E	E		
	5		D	D		N	N	D	D	D			D	D	E

Key: RN - Registered Nurse
CNA - Certified Nursing Aide

N - 2315 - 0730 hours
D - 0715 - 1530 "
E - 1515 - 2330 "

The Research Instruments

There were three instruments used to obtain measures of three of the dependent variables: a patient satisfaction questionnaire, a nursing care observation sheet, and a job satisfaction questionnaire.

Patient Satisfaction Questionnaire

The instrument selected to obtain a measure of patient satisfaction with nursing care was developed by Abdellah and Levine.¹ It consisted of fifty descriptive items which were carefully constructed using incidents reported by both patients and staff. This particular questionnaire was selected because it appeared to have the greatest face validity among available instruments. The letter accompanying the questionnaire was modified slightly, but the fifty items were retained in their original form. Abdellah and Levine developed weights for each item ranging from one to five, as all items were not regarded as being of equal importance. The weighting system was revised by the investigator and one other nurse, because it was thought that some of the assigned weights were not as valid as they might have been

¹Faye G. Abdellah, and Eugene Levine, "Developing a Measure of Patient and Personnel Satisfaction with Nursing Care," Nursing Research, 5 (February, 1957), pp. 100-108.

fifteen years ago when the instrument was constructed.¹

A total of 222 patients from the three units at all four testing periods completed Patient Satisfaction Questionnaires. Revised weights were assigned to the items and a sum for each questionnaire was obtained. Patient responses were coded as follows: if an incident was checked as having happened (either "to-day," "some other day," or both) it was coded as 1, and if an incident was checked as "did not happen," it was coded as 0. Thus the higher the score, the less the patient perceived his nursing care as satisfactory.

Reliability

The reliability of this questionnaire does not appear to have been established. Establishing reliability of a patient satisfaction questionnaire presents problems because administration of the instrument "twice under the same circumstances" can rarely be achieved.² Because of the difficulty of eliminating the effects of testing, and the effects of intervening variables such as change of patient's condition between test and re-test, estimation of the

¹For example, item 30: "Had to get out of bed to take a bath even though I felt bad," was originally given a weight of four. This weight was reduced because even though a patient "feels bad," mobilization of patients is usually a therapeutic necessity. The revised weights were as follows: 4--critical; 3--very important; 2--important; 1--relevant; and 0--not relevant. The original and revised weights are included in Appendix 1.

²David J. Fox, Fundamentals of Research in Nursing (New York: Appleton-Century-Crofts, 1966), pp. 227-28.

reliability of this instrument was not attempted.

Validity

Abdellah and Levine went to considerable lengths to validate each item by verifying that incidents reported by patients had actually occurred. It took " . . . two years to develop a valid instrument to measure patient satisfaction with nursing care."¹ Consequently this investigator considered that the instrument had content validity.

Nursing Care Observation Sheet

A check list was constructed for the purpose of measuring selected nursing care characteristics. Four senior nursing administrators at the hospital and the investigator modified the Quality Control Index referred to in Chapter II,² according to criteria of content validity.³ The characteristics of nursing care selected for appraisal were representative of four dimensions of nursing process and nursing outcomes: the patient's (1) condition at the time of observation, (2) immediate environment, (3) Kardex, and (4) nursing record.⁴ This instrument should not be

¹Abdellah and Levine, (1957), op.cit., p. 101.

²Commission for Administrative Services in Hospitals, A Quality Control Plan for Nursing Service (Los Angeles: C.A.S.H., 1965). Mimeographed.

³Fred N. Kerlinger, Foundations of Behavioral Research (New York: Holt, Rinehart and Winston Inc., 1964), pp. 445-47.

⁴The Nursing Care Observation Sheet is included in Appendix II.

regarded as a comprehensive method of evaluating standards of nursing care, but as a gross indicator of selected components of nursing care.

The Nursing Care Observation Sheet consisted of twenty-two constant items (applicable to every patient observed) and thirteen optional items (applicable to some of the patients observed).¹ Two assumptions were made prior to computing scores for each patient: (1) the level of general nursing care required was comparable for the three nursing units, and (2) optional items, if applicable, were not more critical in terms of maintaining levels of nursing care than constant items. Equal weight was assigned to the items, but the data was not regarded as interval level data. The data was assumed to be ordinal level data having an underlying continuous variable, i.e., nursing care.

The scoring process for this instrument was as follows: items were scored 2, if satisfactory; 1, if unsatisfactory; and 0, if not applicable. All item scores were summed and divided by the total number of applicable items, hence each patient's score fell between 1 and 2. All patient scores were thus comparable regardless of the number of optional items that were applicable for each individual patient. As there were two Nursing Care Observation Sheets per patient, one completed by each of the two nurse observers, an average

¹It will be seen on this instrument in Appendix II that the number of each item is preceded either by "C" or "O" to indicate constant and optional items respectively.

of the two sets of observations was computed for each patient; a high score indicated satisfactory characteristics of nursing care.

Reliability

A test of consistency of rating of the two nurse observers was conducted using the analysis of variance model discussed by Maguire and Hazlett.¹ The estimated degree of consistency of rating is reported in Table 5. In column 1, the Pearson product-moment correlation coefficient is shown, which reflects the consistency of the linear relationship between the two sets of scores. In column 2, the estimated consistency for any one judge is shown; the higher reliability estimate shown in column 3 indicates

TABLE 5

INTER-JUDGE CONSISTENCY ON OBSERVATIONS OF SELECTED
CHARACTERISTICS OF NURSING CARE

1	2	3
Correlation Coefficient	Consistency of Linear Relationships Means and Variances	
0.6572	0.6680	0.8010

the consistency of rating for judges taken two at a time. The correlations in columns 2 and 3 were derived using scores of both

¹T. O. Maguire, and C. B. Hazlett, "Reliability for the Researcher," Alberta Journal of Educational Research, 15 (June, 1969), 117-26.

judges at all testing periods; both mean and variance differences in the scores are regarded as sources of inconsistency. It would seem that the assessments of both nurse observers were not inconsistent.

Validity

The items contained in the Nursing Care Observation Sheet include only those items which were unanimously regarded as valid by the committee of four nursing administrators and the investigator, thus it was also considered to have content validity.

Job Satisfaction Questionnaire

The instrument selected for measuring work satisfaction was developed by Tausky and Piedmont to assess attitudes of nurses to five components of the work situation, namely: (1) task, (2) organization, (3) interaction, (4) autonomy, and (5) pay.¹ Summation of all scores in the instrument was assumed by the authors to provide a global indicator of work satisfaction.² The instrument was regarded by Tausky and Piedmont as a tentative attempt toward an "index of satisfaction" and as having face validity; no tests of reliability were performed on the original

¹Curt Tausky, "Work Satisfaction Among Nurses," in Spoke Design for Inpatient Care: Final Report, Bright M. Dornblaser, and Eugene B. Piedmont (Amherst, Mass: Department of Health, Education and Welfare, 1969), Ch. IV.

²Ibid., p. 101.

questionnaire.¹ In view of the gross nature of the instrument it was decided to construct a new questionnaire based on seventeen of the forty-five items which appeared to be most valid. Eight additional items were constructed to test attitudes towards change in scheduled hours of work. To obtain an estimate of reliability (see below under "reliability"), for each of the above twenty-five items a parallel item was constructed,² and the ordering of these fifty items in the questionnaire was established by random assignment.³ Item fifty-one is discussed below under "validity" and item fifty-two was designed to elicit specific reactions of the nursing staff to the new schedule. Items one to fifty were administered to the nursing staff in all three units at the pretest, and to the CU at O₂, O₃, and O₄. Nursing staff in EI and EII completed items one to fifty-two at O₂, O₃, and O₄.

Two hundred and thirty-two Job Satisfaction Questionnaires were distributed to the fifty-eight members of the nursing staff in the three units over the four testing periods, and 224 (96.5 per cent) were returned. Responses

¹This information was conveyed to the investigator in a written communication from Dr. Eugene Piedmont, dated November 23rd, 1971.

²This technique was modelled after the technique used by J. M. Steele, Dimensions of the Class Activities Questionnaire (Urbana, Illinois: University of Illinois, 1969). Mimeographed.

³A copy of the instrument is included in Appendix III.

to the questionnaire items were scored as follows: Strongly Agree--4; Agree--3; Disagree--2; and Strongly Disagree--1. A sum for each questionnaire was obtained, and the total score was assumed to represent a global attitude of the nurse to her work role, a high score indicating high work satisfaction.

Reliability

The purpose of the parallel forms technique was to allow matching of the responses to each pair of statements so that a measure of the consistency of response could be obtained.¹ Using the criterion of Steele,² at least 67 per cent response consistency was considered necessary for a pair of items to be regarded as reliable. Results of the analysis of response consistency are given in Chapter IV.³

Validity

To establish the validity of this instrument, all reliable items were factor analyzed to identify the underlying component factors and to see if these corresponded to the factors outlined above i.e., task, organization,

¹The paired items are as follows: 1 and 32; 2 and 46; 3 and 25; 4 and 12; 5 and 41; 6 and 19; 7 and 47; 8 and 39; 9 and 22; 10 and 30; 11 and 37; 13 and 34; 14 and 45; 15 and 31; 16 and 36; 17 and 35; 18 and 44; 20 and 40; 21 and 49; 23 and 26; 24 and 43; 27 and 29; 28 and 38; 33 and 42; 48 and 50.

²Steele, op.cit., p. 6.

³See pp. 80-81.

interaction, autonomy, pay, and change in scheduled hours of work. A further cross check on the validity of the instrument was the addition of item fifty-one which was a direct question asking nurses to state which work schedule they preferred. Responses to this question were compared with the overall job satisfaction scores for both experimental units. The results of this comparison, and of the factor analysis are reported in Chapter IV.¹

Data Collection Procedure

The sequence for collecting data at every testing period was the same. Days were randomly selected for the administration of the patient questionnaires and for the observation of nursing care characteristics. To reduce possible bias by observers, patients were asked to complete their questionnaires in the week preceeding the date on which nursing observations were made. Patients were given their questionnaires by the head or deputy head nurses with brief explanations and encouragement to complete the forms. The completed questionnaires were sealed in envelopes and collected later in the day.

In the following week, the investigator and a second nurse observer entered the research units, without prior notice to the nursing staff to reduce experimenter effect, and made observations on a random selection of patients.

¹See pp. 82-92.

The second nurse observer was a senior nursing student non-randomly selected by the Director of Nursing Education of a three-year diploma school of nursing affiliated with the hospital. Selection of the student nurse was made on the basis of her general proficiency throughout her nursing programme, her interest in the study, and her availability at all four testing periods.

The procedure for observing selected nursing care characteristics began with an examination of the nursing care plan for the patient as outlined on the Kardex. Pertinent biographical, medical and nursing information was noted on the first page of the Nursing Care Observation Sheet to facilitate the subsequent observation of the patient and the nursing record. None of this information was used in the analysis of data, because it was not proposed to make biographical comparisons between the samples of patients in each nursing unit. Making independent observations, the nurse observers entered the patient's room together, introduced themselves and assessed the immediate condition of the patient, and his environment. Patients who were sleeping or unable to communicate were not disturbed, and information which would otherwise have been obtained from the patient was obtained by questioning the nursing staff. Finally, the patient's chart and the nurses' notes were examined and assessed according to the check list of items.

During the same week in which nursing observations

were made, members of the nursing staff of the three research units completed their Job Satisfaction Questionnaires, returning them unidentified, in sealed envelopes.

Hospital personnel supplied information in relation to staffing costs for fifteen weeks immediately preceding the study (Period I), and for the fifteen week study period itself (Period II). Costs incurred during these two periods of time were compared for each of the three units. Fixed cost items included: (1) addition or deletion of nursing positions; (2) number of resignations, transfers to other units and leaves of absence; and (3) number of nurses taken on staff. Variable cost items included: (1) number of hours of relief staff sent to each unit; (2) number of hours that nurses were away from work due to sickness, absence without leave, and compassionate leave.

Analysis of the Data

The statistical treatment of the data is described in the following order: patient satisfaction, nursing care characteristics, and worksatisfaction. Data collected in relation to costs of staffing were treated in a descriptive manner.

Patient Satisfaction

a) Assumptions: responses obtained with the Patient Satisfaction Questionnaire were weighted¹ and the data was

¹See pp. 55-56.

treated as ordinal level data, assuming that patient satisfaction with nursing care was a continuous variable.

b) Hypotheses: H_0 : patient satisfaction is not affected by a redistribution of working hours of nursing staff. H_1 : patient satisfaction is affected by a redistribution of working hours of nursing staff.

c) Statistical Test:¹ Kruskal-Wallis one-way analysis of variance where H is distributed as chi square with degrees of freedom $k-1=2$ between nursing units, and $k-1=3$ within nursing units.

d) Significance Level and Region of Rejection: the significance level selected was .05, and the null hypothesis was rejected if the observed H value between nursing units was $\geq |.05\chi^2_2=5.99|$, and if the observed H value within nursing units was $> |.05\chi^2_3=7.82|$.

Selected Characteristics of Nursing Care

a) Assumptions: the underlying variable being measured, i.e., nursing care, was a continuous variable and the data obtained was ordinal level data.

b) Hypotheses: H_0 : selected characteristics of nursing care are not affected by a redistribution of working hours of nursing staff. H_1 : selected characteristics of nursing care are affected by a redistribution of the working

¹Sidney Siegel, Nonparametric Statistics for the Behavioral Sciences (New York: McGraw-Hill Book Co., 1956), pp. 184-193.

hours of nursing staff.

c) Statistical Test: Kruskal-Wallis one-way analysis of variance where H is distributed as chi square with degrees of freedom $k-1=2$ between nursing units, and $k-1=3$ within nursing units.

d) Significance Level and Region of Rejection: the significance level selected was .05, and the null hypothesis was rejected if the observed H value between nursing units was $\geq |.05\chi^2_2=5.99|$, and if the observed H value within units was $\geq |.05\chi^2_3=7.82|$.

Work Satisfaction of Nursing Staff

a) Assumptions: the underlying variable being measured, i.e., attitudes to work roles, was a continuous variable and the data obtained was ordinal level data.

b) Hypotheses: H_0 : work satisfaction is not affected by a redistribution of the working hours of nursing staff.
 H_1 : work satisfaction is affected by a redistribution of the working hours of nursing staff.

c) Statistical Test: Kruskal-Wallis one-way analysis of variance where H is distributed as chi square with degrees of freedom $k-1=2$ between nursing units, and $k-1=3$ within nursing units.

d) Significance Level and Region of Rejection: the significance level selected was .05, and the null hypothesis was rejected if the observed H value between nursing units was $\geq |.05\chi^2_2=5.99|$, and if the observed H value within

nursing units was $\geq |.05\chi^2_3=7.82|$.

In all instances of statistically significant findings, Mann-Whitney U tests were conducted on all possible pairs of samples, to determine which of the three (or four) groups could be regarded as having been drawn from the same population.¹

Costs of Staffing

Fixed and variable costs of staffing data were summarized and arranged in frequency tables.

The Experimental Period

The two new schedules were posted approximately two weeks before the experiment was due to begin. Prior to the study, the head nurses had been using a five- to six-week repeating schedule, and nursing staff usually knew their working hours well in advance. Introducing the new schedules did not change this practice (with the exception of the initial posting) and nurses were able to ascertain their hours of work at least five weeks ahead of time throughout the study.

The first week of the experiment was a transition week. Transition from the old to the new schedule in both experimental units involved redistributing the hours of most nurses into two eight-hour shifts and two twelve-hour shifts to avoid the situation in which nurses would exceed eighty

¹Siegel, op.cit., p. 116.

hours of work in fourteen calendar days.¹ The cyclic schedules began in the second week of the experiment.

Due to unforeseen administrative circumstances, the investigator found it necessary to conduct the third testing period two weeks early. Nursing staff had been informed prior to the study that testing would occur on randomly selected days, and thus it was believed that minimal bias was introduced by this modification. In all other respects the study continued as planned, and was completed after the final testing period at the beginning of May, 1972.

In this chapter, the quasi-experimental research design used in this study was explained, and the methodology employed to measure the five dependent variables in relation to the introduction of a compressed work week for nursing staff, was described. Data collected during the course of the study is now presented, analyzed and discussed in the following chapter.

¹This constraint was due to the nursing association agreements. See p. 12.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

The analysis of data relative to the five dependent variables under investigation is presented in detail in the following order: (1) patient satisfaction, (2) selected characteristics of nursing care (SCNC), (3) work satisfaction of nursing staff, (4) selected fixed costs of staffing, and (5) selected variable costs of staffing. In the case of the first three variables, a between nursing unit analysis is presented followed by a within nursing unit analysis, and then the findings are discussed. Following the analysis of data related to costs of staffing, the central findings are brought together in a general discussion, and conclusions are drawn.

Patient Satisfaction

The reader is reminded that 222 patients completed questionnaires, and that the higher the obtained score on each questionnaire the less the patient perceived his nursing care as satisfactory. The maximum score possible was 115, and the obtained scores ranged from 0 to 83. Eighty-five per cent of the total number of patients scored less than 20, and 70 patients (31 per cent) scored 0, i.e., did not indicate complaints in relation to the questions asked.

Between Nursing Unit Analysis

The rank order of each unit in terms of patient satisfaction scores at each testing period is presented in Table 6,

TABLE 6

PATIENT SATISFACTION: RANK ORDER
BETWEEN NURSING UNITS

Unit	O ₁	O ₂	O ₃	O ₄
CU	3	3	3	3
EI	2	1	1	1
EII	1	2	2	2

rank 1 indicating the most satisfaction (lowest scores). Patients in the Control Unit (CU) reported more unsatisfactory incidents at each testing period than patients in either EI (the unit in which nurses worked fifteen weeks of the new schedule), or EII (the unit in which work schedules were alternated). Patient satisfaction scores were subjected to the Kruskal-Wallis analysis of variance test and the results are presented in Table 7. Differences between the units were not statistically significant at any of the testing periods.

Within Nursing Unit Analysis

Patient perceptions of nursing care within the CU (Table 8) would appear to have remained fairly constant throughout the study. Within EII patient satisfaction scores fluctuated slightly, higher scores (less satisfaction) being obtained

TABLE 7
PATIENT SATISFACTION BETWEEN NURSING UNITS:

AT O_1

Unit	N	Sums of Ranks	H	d.f.	p.
CU	25	708.00	0.185	2	> .05
EI	15	433.50			
EII	15	398.50			

AT O_2

Unit	N	Sums of Ranks	H	d.f.	p.
CU	29	848.50	0.567	2	> .05
EI	14	464.50			
EII	18	578.50			

AT O_3

Unit	N	Sums of Ranks	H	d.f.	p.
CU	27	760.00	1.348	2	> .05
EI	6	131.00			
EII	18	434.50			

AT O_4

Unit	N	Sums of Ranks	H	d.f.	p.
CU	26	750.50	3.345	2	> .05
EI	11	226.50			
EII	18	563.00			

TABLE 8
PATIENT SATISFACTION WITHIN NURSING UNITS

CU

Testing Period	N	Sums of Ranks	H	d.f.	p.
0 ₁	25	1455.00	0.720	3	> .05
0 ₂	29	1486.00			
0 ₃	27	1438.00			
0 ₄	26	1399.00			

EI

Testing Period	N	Sums of Ranks	H	d.f.	p.
0 ₁	15	403.00	3.942	3	> .05
0 ₂	14	362.50			
0 ₃	6	114.00			
0 ₄	11	201.50			

EII

Testing Period	N	Sums of Ranks	H	d.f.	p.
0 ₁	15	519.00	1.640	3	> .05
0 ₂	18	654.00			
0 ₃	18	548.00			
0 ₄	18	694.00			

when nurses were working the new schedule at O_2 and O_4 .

Discussion

Patients would seem to have been equally satisfied with their nursing care in the two medical units (EI and EII) and in the surgical unit (CU) at all four testing periods. Although there was some variation in patient satisfaction scores at each testing period, none of these apparent differences in satisfaction with nursing care was statistically significant. The null hypothesis that patient satisfaction is not affected by a redistribution of working hours of nursing staff was therefore supported.

Patients were given an opportunity to make additional remarks at the end of their questionnaires, and of the 108 patients (45 per cent) who commented on their nursing care, only fourteen indicated that they had dissatisfactions. Thirteen patients mentioned both satisfying and dissatisfying aspects of their nursing care, and sixty-five patients made entirely satisfied remarks. Six patients, two at O_1 in EI, and four at O_4 in EII indicated their disapproval of twelve-hour shifts for nursing staff. Thirteen per cent of the total group of patients did not fully complete the questionnaire, and several patients apparently failed to notice that items 4, 20, and 39 were positively stated versions of items 7, 37, and 40 respectively, i.e., in essence responding inconsistently to these six items. These findings seem to suggest that the instrument is perhaps too

long, and that a response set may have occurred with some of the patients, which casts some doubt upon the validity of this instrument. It would seem that if an adequate measure of patient satisfaction is to be obtained, a shorter questionnaire that has been tested for reliability and validity is needed.

The findings of this study are not unlike the findings of studies reviewed in Chapter II.¹ Patients tended to be uncritical of the nursing staff, and to report general satisfaction with their nursing care.

Selected Characteristics of Nursing Care

Turning to the results of the analysis of selected characteristics of nursing care (SCNC), the reader will recall that each patient's score was a composite score consisting of the average of both assessments made by the two nurse observers. A high score in relation to SCNC indicated a higher level of nursing care.

Between Nursing Unit Analysis

The scores of patients in each unit at all four testing periods were subjected to the Kruskal-Wallis analysis of variance test, and the results are presented in Table 9. At the pretest (O_1) differences in SCNC scores between the three units were statistically significant. Mann-Whitney U tests were conducted on all possible pairs of unit scores,

¹See pp. 33-35.

TABLE 9
SELECTED CHARACTERISTICS OF NURSING CARE
BETWEEN NURSING UNITS:

AT O_1

Unit	N	Sums of Ranks	H	d.f.	p.
CU	6	28.50	7.031	2	<.05
EI	4	35.50			
EII	6	72.00			

AT O_2

Unit	N	Sums of Ranks	H	d.f.	p.
CU	6	53.00	1.185	2	>.05
EI	4	41.00			
EII	6	42.00			

AT O_3

Unit	N	Sums of Ranks	H	d.f.	p.
CU	6	46.00	0.413	2	>.05
EI	4	33.50			
EII	6	56.50			

AT O_4

Unit	N	Sums of Ranks	H	d.f.	p.
CU	6	36.00	2.863	2	>.05
EI	4	43.00			
EII	6	57.00			

and it was determined that the one pair of units which differed significantly was the CU and EII. At O_1 SCNC scores were highest in EII and lowest in the CU, but the rank order of the three units in terms of their SCNC scores changed at O_2 and again at O_3 , and resumed its original relationships at O_4 . Table 10 illustrates these rank order changes at the

TABLE 10
SELECTED CHARACTERISTICS OF NURSING CARE:
RANK ORDER BETWEEN NURSING UNITS

Unit	O_1	O_2	O_3	O_4
CU	3	1	2	3
EI	2	3	3	2
EII	1	2	1	1

four testing periods, rank 1 indicating highest level of nursing care (highest scores). The differences in SCNC scores between the three nursing units at O_2 , O_3 , and O_4 were not statistically significant.

Within Nursing Unit Analysis

The results of the analysis of scores of each individual nursing unit at the four testing periods are presented in Table 11, and indicate that fluctuations of scores occurred within each of the units. The greatest variability in SCNC scores seems to have occurred in the CU. In EI lowest SCNC

TABLE 11
SELECTED CHARACTERISTICS OF NURSING CARE
WITHIN NURSING UNITS

CU

Testing Period	N	Sums of Ranks	H	d.f.	p.
0 ₁	6	54.00	5.001	3	> .05
0 ₂	6	106.00			
0 ₃	6	74.50			
0 ₄	6	65.50			

EI

Testing Period	N	Sums of Ranks	H	d.f.	p.
0 ₁	4	35.00	2.429	3	> .05
0 ₂	4	42.00			
0 ₃	4	22.00			
0 ₄	4	37.00			

EII

Testing Period	N	Sums of Ranks	H	d.f.	p.
0 ₁	6	102.50	3.572	3	> .05
0 ₂	6	60.00			
0 ₃	6	68.00			
0 ₄	6	69.50			

scores were obtained at O_3 at which time nurses had been working ten weeks of the new schedule. In EII the level of nursing care at the pretest was apparently higher than at any time during the study. None of these apparent differences in SCNC over the four testing periods was statistically significant.

Discussion

At the beginning of the study the three nursing units were significantly different in terms of their SCNC, but by the end of the study differences were no longer significant. One might therefore conclude that change had occurred, but the analysis of patient scores within each unit over the four testing periods does not support such a conclusion, as not one of the observed differences in scores within each unit was statistically significant.

The investigator would remind the reader that the primary question underlying the SCNC hypothesis is: "Does a change in work schedule affect the characteristics of nursing care on a given unit?" It would seem to be of less concern that there are differences between two or more units. On the one hand, from a strict experimental standpoint, it might be considered "ideal" that the CU, EI, and EII had not differed significantly at O_1 , but it can be argued that the "ideal" is to take the nursing units as they exist, in this case with their apparent differences. Thus, while significant differences between the three units are relevant

and interesting, the primary focus of this analysis must be upon changes within each of the units.

In short, no clear pattern seems to have emerged from the analysis of between unit scores or within unit scores in relation to SCNC of the three units. As the differences observed within the three units were not statistically significant, it was concluded that the null hypothesis was upheld: selected characteristics of nursing care are not affected by a redistribution in the working hours of nursing staff.

Work Satisfaction of Nursing Staff

It will be recalled from Chapter III that estimates of consistency of response and factor analysis were conducted in order to establish the reliability and validity of the Job Satisfaction Questionnaire. The results of these procedures are discussed before presenting the analysis of data in relation to the work satisfaction of the nursing staff.

Response Consistency

Analysis of the consistency of response revealed that twenty-four pairs of items had a greater than 73 per cent consistency. Since only 60.6 per cent consistency was obtained for paired items 18 and 44, these items were discarded from subsequent analyses because they did not meet the minimum criterion of 67 per cent. Observed consistencies for pairs of items are given in Table 12.

TABLE 12
JOB SATISFACTION QUESTIONNAIRE RELIABILITY

Paired Items	Consistency of Response	Paired Items	Consistency of Response
	%		%
1 and 32	90.9	15 and 31	82.4
2 and 46	95.3	16 and 36	78.9
3 and 25	74.2	17 and 35	87.8
4 and 12	87.4	18 and 44	60.6*
5 and 41	80.0	20 and 40	88.7
6 and 19	83.5	21 and 49	77.9
7 and 47	92.3	23 and 26	75.6
8 and 39	91.6	24 and 43	81.9
9 and 22	92.9	27 and 29	87.6
10 and 30	88.1	28 and 38	77.1
11 and 37	78.3	33 and 42	76.7
13 and 34	85.5	48 and 50	73.4
14 and 45	93.3		

* Discarded for further analyses.

Factor Analysis

The forty-eight consistent job satisfaction items were factor analyzed and twelve factors emerged with eigenvalues greater than 1. The sum of these twelve eigenvalues was 33.433, i.e., 70.5 per cent of the variance of all items was accounted for by these twelve factors. On the unrotated factor matrix a large general factor was identified which accounted for 21.6 per cent of the variance of all forty-eight items. Varimax, quartimax, and equamax rotations were performed and those items with loadings greater than 0.5 were examined for their content. Six interpretable factors were observed in the quartimax rotation, and these factors accounted for 48.4 per cent of the variance of all items. Table 13 shows the six quartimax rotated factors. Items with a value greater than 0.5 are underlined.

It would appear from the analysis of the content of the items loading on each factor that the factors were: (I) institutional organization, (II) work load, (III) task, (IV) work group interaction, (V) off duty time, and (VI) nursing unit organization. Note that Factors I, III, and IV correspond closely to three factors of the Tausky and Piedmont instrument. Factor I and V would seem to have been measuring attitudes to extrinsic aspects of the job, namely, attitudes to management and the institution in general (Factor I), and attitudes to the amount of rest and relaxation during off duty time (Factor V). Factors II, III, IV, and

TABLE 13
JOB SATISFACTION FACTORS (QUARTIMAX ROTATION)

Communalities*		I	II	III	IV	V	VI
1	0.660	0.076	0.016	0.002	0.180	0.037	0.029
2	0.810	0.114	0.165	0.021	-0.012	0.144	-0.053
3	0.531	0.595	0.004	-0.026	-0.091	-0.026	0.025
4	0.724	0.593	0.050	-0.078	0.053	-0.288	-0.042
5	0.630	0.207	0.712	-0.106	0.021	0.012	-0.035
6	0.736	0.226	0.062	0.210	0.126	0.026	0.073
7	0.747	0.094	0.015	0.841	0.042	0.048	0.011
8	0.687	0.175	0.009	0.087	0.086	-0.141	0.146
9	0.760	0.092	0.011	0.772	0.221	-0.004	0.042
10	0.679	0.175	0.089	0.339	0.111	-0.036	0.216
11	0.675	-0.101	0.759	0.003	-0.131	0.091	0.128
12	0.754	0.597	0.054	-0.121	0.096	-0.182	0.124
13	0.709	0.302	0.130	0.039	0.196	-0.053	0.499
14	0.626	0.263	-0.114	0.064	0.655	0.094	0.148
15	0.686	0.738	0.076	0.205	-0.056	0.016	0.127
16	0.641	0.061	0.230	0.107	0.008	0.712	0.092
17	0.672	0.228	0.536	0.148	0.044	0.264	-0.020
19	0.761	0.289	0.171	0.144	0.356	0.037	0.155
20	0.578	0.149	0.111	0.201	0.540	-0.079	0.151
21	0.671	-0.115	0.052	-0.132	0.072	-0.071	-0.033
22	0.810	0.100	0.008	0.822	0.072	0.138	0.204
23	0.655	-0.109	0.038	0.009	0.017	0.705	0.052
24	0.679	0.539	0.092	0.330	0.368	0.131	0.003
25	0.697	0.764	-0.024	0.044	0.179	0.097	-0.067
26	0.711	0.096	0.165	0.011	0.051	0.780	-0.061
27	0.619	0.083	-0.163	0.528	0.354	0.192	0.030
28	0.643	0.396	0.043	0.143	0.247	0.047	0.604
29	0.740	0.237	0.014	0.374	0.183	0.273	0.579
30	0.700	0.216	0.091	0.259	0.070	0.091	0.675
31	0.717	0.733	0.201	0.070	-0.019	0.077	0.268
32	0.766	0.121	0.023	0.031	0.111	0.142	0.431
33	0.696	0.691	0.102	0.131	0.161	0.120	0.231
34	0.823	0.256	0.150	0.027	0.143	0.124	0.768
35	0.641	0.134	0.495	0.301	-0.208	0.359	0.175
36	0.740	0.054	0.210	0.028	-0.019	0.743	0.264
37	0.787	0.202	0.832	-0.025	0.067	0.063	0.077
38	0.623	0.639	0.082	-0.027	0.366	0.004	0.049
39	0.710	0.146	0.127	0.089	0.478	-0.090	0.011
40	0.703	0.243	0.036	0.272	0.718	-0.093	0.154
41	0.778	0.109	0.820	-0.074	0.038	0.106	0.117
42	0.609	0.613	0.096	0.052	0.311	-0.058	0.123
43	0.701	0.495	0.119	0.240	0.408	0.165	0.020
45	0.772	0.225	-0.086	0.022	0.800	-0.045	0.062
46	0.819	0.166	0.178	-0.041	-0.008	0.113	-0.002
47	0.767	0.089	0.048	0.835	0.058	-0.085	0.082
48	0.636	0.234	0.494	0.149	-0.218	0.310	-0.114
49	0.661	0.066	-0.154	0.096	0.552	0.306	-0.001
50	0.491	-0.031	0.544	0.131	0.046	0.109	-0.071
Eigenvalues							
	33.431	5.740	4.002	3.968	3.700	3.070	2.759

* Communalities resulting from twelve factors with eigenvalues greater than 1.

VI, would seem to be related to intrinsic aspects of the job. The content of items loading on Factor II was related to the amount of work to be done, and the ability of the available staff to cope with the work load. Factor III seemed to indicate attitudes to the nursing task, and items loading on Factor IV seemed to be related to team work and group interaction. Factor VI can best be described as indicating attitudes to the organization of nursing care at the unit level, and to nurses' perceptions about the amount of autonomy they experienced on the job.

Since only 48 per cent of the variance is predictable by these six factors, and because Factor V (off duty time) is the only dimension which would appear to be directly related to the experimental situation (work schedule), any analysis done on global scores of all items may not be sensitive to manipulations of work schedules. The reader should also note that twelve of the pairs of items developed for reliability purposes have loaded together on these six factors. This evidence indicates that these pairs were not only reliable but also displayed some degree of construct validity.

Having discussed the reliability and validity of the Job Satisfaction Questionnaire, the analysis of the data collected with this instrument in the three nursing units is now presented.

Between Nursing Unit Analysis

The reader is reminded that the total score obtained by each nurse was assumed to represent a global attitude to work roles, high scores indicating high satisfaction. In Table 14, the rank order of the nursing units in relation to

TABLE 14

WORK SATISFACTION: RANK ORDER
BETWEEN NURSING UNITS

Unit	O_1	O_2	O_3	O_4
CU	1	1	1	1
EI	2	2	3	2
EII	3	3	2	3

work satisfaction scores at the four testing periods is presented, rank 1 indicating highest work satisfaction (highest scores). The results of Kruskal-Wallis analysis of variance of data obtained from each nursing unit at all four testing periods is presented in Table 15. Differences in work satisfaction between the three nursing units were statistically significant at all four testing periods, highest scores throughout the study being consistently obtained in the CU. Mann-Whitney U tests between all possible pairs of units were conducted, and it was determined that: (1) work satisfaction differed significantly between the CU and EII at all four testing periods, and (2) at O_3 , work satisfaction differed

TABLE 15
WORK SATISFACTION BETWEEN NURSING UNITS:

AT O_1

Unit	N	Sums of Ranks	H	d.f.	p.
CU	21	750.00	10.544	2	<.05
EI	15	457.50			
EII	20	388.50			

AT O_2

Unit	N	Sums of Ranks	H	d.f.	p.
CU	21	736.00	12.716	2	<.05
EI	15	469.50			
EII	19	334.50			

AT O_3

Unit	N	Sums of Ranks	H	d.f.	p.
CU	21	799.00	10.569	2	<.05
EI	16	420.00			
EII	20	434.00			

AT O_4

Unit	N	Sums of Ranks	H	d.f.	p.
CU	21	770.00	12.231	2	<.05
EI	15	447.00			
EII	20	379.00			

significantly between the CU and EI. With the exception of the testing at O_3 , the nursing staff in EII appeared to be the least satisfied group.

Within Nursing Unit Analysis

Since anonymity had been guaranteed, nurses were not required to code their individual Job Satisfaction Questionnaires, consequently the samples of nurses within each unit were treated as independent groups at each of the four testing periods. It should therefore be kept in mind that if these groups were dependent groups and their scores positively correlated, more significant results would likely have been obtained.¹

The Kruskal-Wallis analysis of variance of work satisfaction scores obtained in each unit over the four testing periods is presented in Table 16. The salient feature which seemed to emerge from this analysis was that all three nursing units obtained highest scores at O_1 and that the units did not apparently regain these levels of satisfaction at any other testing period. An overall decline in work satisfaction scores was observed in the CU, and a similar decline in EI was observed the lowest scores being obtained at O_3 at which time nursing staff had worked ten weeks of the new schedule.

¹Gene V. Glass, and Julian C. Stanley, Statistical Methods in Education and Psychology (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1970), pp. 127-129.

TABLE 16
WORK SATISFACTION WITHIN NURSING UNITS

CU

Testing Period	N	Sums of Ranks	H	d.f.	p.
0 ₁	21	1018.00	1.914	3	> .05
0 ₂	21	890.00			
0 ₃	21	847.50			
0 ₄	21	814.50			

EI

Testing Period	N	Sums of Ranks	H	d.f.	p.
0 ₁	15	564.00	5.608	3	> .05
0 ₂	15	524.00			
0 ₃	16	390.50			
0 ₄	15	412.50			

EII

Testing Period	N	Sums of Ranks	H	d.f.	p.
0 ₁	20	1001.50	6.533	3	> .05
0 ₂	19	735.50			
0 ₃	20	788.50			
0 ₄	20	634.50			

An interesting pattern in work satisfaction scores seemed to occur in EII. High satisfaction seems to have prevailed at O_1 , but this was followed by a decrease in scores at O_2 after five weeks of working the new schedule. At O_3 nurses had returned to the regular schedule and a slight increase in work satisfaction scores was observed. Finally, at O_4 when nurses were again working the new schedule, work satisfaction scores were lower than at any other time. However, none of these apparent fluctuations in work satisfaction was statistically significant.

Discussion

The three nursing units were not equivalent in terms of work satisfaction at O_1 and remained significantly different throughout the study. As stated in the discussion of SCNC, within unit differences would seem to be of greater import in terms of the underlying hypothesis than between unit differences. The reader's attention is directed to the overall decline in work satisfaction scores in all three nursing units. In this type of research design, explanations for a decline in work satisfaction scores would very probably lie in one or more of the following:

- (1) a novelty and/or a Hawthorne effect may have existed at O_1 when nursing staff in all three units first became the subjects of the experiment; one might expect that these possible effects would not be sustained over time, for example, over a period of fifteen weeks; and/or
- (2) an historical effect such as the time of year may have influenced overall attitudes to work

roles in all units alike; the experiment was conducted during the winter between January and May in which period of time only one statutory holiday fell; and/or

- (3) a common variable in the hospital and/or community environment may have affected all three nursing units in a similar manner.

From a conservative standpoint, the temptation to look at directional rank differences in work satisfaction scores must be avoided because there were no significant differences observed. A fundamental and serious issue that must still be dealt with regarding the obtained scores with this Job Satisfaction Questionnaire is the question of validity. As will be seen from the instrument in Appendix III, some of the items are debatably affected by a manipulation of work schedules. To cross validate this questionnaire, the responses to the one question with seemingly high face validity (item 51) were subjected to the binomial test, the results of which are presented in Table 17. The hypothesis underlying the binomial test is that preference for either eight-hour or twelve-hour shifts is equivalent. This question was asked of the nursing staff in EI and EII only at O_2 , O_3 , and O_4 , since it was at these testing periods that nurses were working twelve-hour shifts.¹ The results of the analysis of the responses to this item are very similar for both EI and EII, and indicate that as one would expect a novelty effect to decline, so preference for twelve-hour

¹In retrospect, the investigator admits that it would have been interesting to have asked this question of the nurses in the CU at these same testing periods.

TABLE 17

WORK SCHEDULE PREFERENCES OF NURSING STAFF:

IN EI

Testing Period	N	Regular Schedule	New Schedule	Confidence Limits
O ₂	15	8	7	0.435 to 0.719
O ₃	16	13	3	-0.004 to 0.380
O ₄	15	13	2	-0.039 to 0.305

IN EII

Testing Period	N	Regular Schedule	New Schedule	Confidence Limits
O ₂	20	12	8	0.185 to 0.615
O ₃	20	15	5	0.060 to 0.440
O ₄	19	17	2	-0.033 to 0.243

shifts became significantly less than for those preferring eight-hour shifts.

Overall work satisfaction would seem to be tenuously tied to work schedule, and directional differences in observed work satisfaction scores must be cautiously regarded. The investigator suggests that because of the high face validity of item 51 which was used for cross validation purposes, the results of the binomial test are the most trustworthy. Even if directional differences are regarded with caution, the fluctuations in the scores of nursing staff in EII would seem to lend support to the results of the binomial test.

The investigator submits that on the basis of the evidence of the binomial test of shift preferences of nursing staff, that the alternative hypothesis is supported: work satisfaction is adversely affected when there is a redistribution of the working hours of nursing staff.

Advantages and Disadvantages of the New Schedule

Question 52 of the Job Satisfaction Questionnaire was included in order to give nursing staff an opportunity to report their specific reactions to the new schedule. It was hoped that such responses would provide some beginning data which might be useful in terms of future research in this area. The most outstanding feature of responses to item 52 was that there were disproportionately more disadvantages cited than advantages. Comments fell roughly into three

categories: the work schedule, nursing care, and the nurses' social life. Advantages and disadvantages are summarized separately, and no attempt is made to make comparisons between the comments of nursing staff in EI and EII. One hundred and one questionnaires (67 per cent) contained responses to this item.

Advantages

Several consecutive days off over weekends, and the absence of "split" days off (single days off duty) were mentioned as the chief advantages. The overlapping of shifts which occurred with the new schedule, was mentioned as providing a better distribution of staff, and that this type of shift system allowed for more continuity of nursing care. The elimination of the 3 to 11 p.m. shift was perceived as contributing towards a more relaxed working pace, obviating the need for several procedures that were customarily carried out on all three shifts, such as the narcotic count. Shift changes were stated by some nurses to have occurred more smoothly, and that extended shifts seemed to allow more time for teaching patients, and for providing a better quality of nursing care. There were apparently advantages when the night nurses came on duty at 7.15 p.m.; patients and staff were able to get to know each other before the patients were settled for the night.

Disadvantages

The two most frequently cited disadvantages were that the shifts were too long, and too tiring. After ten hours or so on duty, nurses reported that they became tense, irritable, and that general morale deteriorated. The overlapping of shifts was perceived by some nurses as confusing, and as providing an inadequate distribution of staff over the twenty-four hour period, particularly in the morning.

There was evidence of concern among the nurses that the standard of nursing care had deteriorated while the new schedule was in operation. It was stated that continuity of care could not be maintained with a system of overlapping shifts, although other nurses mentioned that twelve hours were too long to be nursing the same patients. Several nurses reported that towards the end of twelve-hour shifts, patients realized that the nurses were tired and refrained from making demands upon them.

It should be reiterated here that 70 per cent of the nurses who took part in this study were married, and from their comments it appeared that many of them were unable to "keep up" with their home obligations while they were working the new schedule. Even though they had four and five consecutive days off, the nurses reported that this did not compensate for the physical and emotional exhaustion experienced after working four consecutive twelve-hour shifts. They reported that they had no time to spend with

their families when working, and it was evident from their remarks that this had created difficulties at home.

Discussion

It would appear that with the exception of the advantage of "bunched" off duty, the advantages and disadvantages cited by the nurses in this study bear little resemblance to those mentioned in the few studies reported in the literature. It was recognized by the head nurses in EI and EII that a radical change in the shift system would necessitate a re-examination of work routines, and they accordingly attempted to prepare their staff for possible changes in the organization of nursing care. The concern of some of the nurses with the "confusion" of overlapping shifts and the feeling of an inadequate supply of nurses in the morning, suggests that fifteen weeks may not be long enough for nurses to accept radical changes in the work routines, for example, the long standing custom of bathing acutely ill patients in the morning. As will be noted, there was considerable inconsistency in their remarks, some of the same features of the new schedule being perceived by some as advantages, and by others as disadvantages.

It was suggested by some nurses that patients did not make demands on nurses who were working twelve-hour shifts. In view of the evidence with regard to the reticence of patients to criticize nursing staff, failure to make demands on the nursing staff could also be true when nurses work a

regular schedule. The comments by several nurses that nursing care had deteriorated should be given consideration, as the Nursing Care Observation Sheet was only a partial means of evaluating nursing care. It could be argued that since SCNC were maintained at comparable levels throughout this study, nurses were able to adjust to a radical change in their hours of work while on the job, but that they seemed to expect to meet their home obligations as if no change had occurred. While this conclusion must be regarded as extremely tentative, the perceptions of these nurses with regard to a change in their hours of work suggest an interesting field for further enquiry, but of a more comprehensive and rigorous nature.

Costs of Staffing

The following presentation and analysis of cost data is somewhat superficial owing to the limited scope of the study. It was hoped that an examination of this variable would at least provide some beginning data, and perhaps lead to the identification of cost factors having the potential for change upon implementation of compressed work week patterns for nursing staff. Cost data were collected for fifteen weeks prior to the study (Period I), and during the fifteen weeks of the study (Period II).

Selected Fixed Costs of Staffing

There were no changes in the selected fixed cost items as a result of the experimental process. There were no

salary increases for nursing staff during Periods I and II, and payment for shift differentials was not in effect either before or during the study.

Turnover

Turnover of staff can be a costly item,¹ and although actual turnover was less in Period II for all three units than in Period I, there would appear to have been no important change in this potential cost factor. A summary of turnover events is presented in Table 18. It will be seen

TABLE 18

NURSING TURNOVER AND TRANSFER EVENTS FOR THE CU,
EI, AND EII DURING PERIODS I AND II

Event	CU		EI		EII	
	I	II	I	II	I	II
Termination of Employment (including Leave of Absence)	2	-	3	1	1	-
Commencement of Employment	1	-	2	-	4	1
Transfer from Unit	-	1	1	-	4	1
Transfer to Unit	1	1	2	1	2	0

¹The estimated cost of replacing a nurse in Canadian hospitals is \$500. Task Force Reports on the Cost of Health Services in Canada, Vol. II: Hospital Services (Ottawa: Queen's Printer, 1970), p. 92.

from this table that no staff positions were created or deleted in either period of time; the apparent gain of one position in EII during Period I was due to the filling of an Assistant Head Nurse position which had been vacant for some time.

Potential Productive Time

There was a small decrease in the amount of "potential productive time" of the nursing staff in EI and EII as a direct result of redistributing their hours of work. Potential productive time refers to the legal amount of work time laid down in the nursing staff association agreements, and may be regarded as the actual time spent on the job, exclusive of time for coffee and meal breaks. When the shifts were extended from eight to twelve hours, an additional thirty minute meal time was allowed. Fifty minutes were allowed for coffee and meal breaks on eight-hour shifts, and eighty minutes on twelve-hour shifts. It can be seen from Table 19 that when nurses worked the new schedule, there was a decrease in their potential productive time. It must be conceded that under normal circumstances time taken for coffee and meal breaks is variable but, theoretically, in a two-week period there was a decrease of one hour and fifteen minutes of potential productive time for every nurse who worked the new schedule. Thus there was a loss of potential productive time of approximately 145 hours in EI, and

TABLE 19

COMPARISON OF POTENTIAL PRODUCTIVE TIME UNDER THREE TYPES OF SHIFT
COMBINATION FOR A TWO WEEK PERIOD

Type of Schedule	Length of Shift	Number of Shifts	Time at Work	Time at Coffee and Meal Breaks	Potential Productive Time
Regular Schedule	8-hour	10	82.30	8.20	74.10
New Schedule	12-hour 8-hour	6) 1)	81.45	8.50	72.55
New Schedule*	12-hour 8-hour	4) 4)	82.00	8.40	73.20

*This type of schedule was worked by the Head Nurse in EI and the Ward Clerk in
EII.

122 hours in EII over the fifteen weeks of the experiment.¹ At the median salary for Registered Nurses of \$3.46 per hour, for example, the "cost" of this loss in potential productive time would have been approximately \$501.00 and \$422.00 for EI and EII respectively. The investigator submits that this loss of potential productive time was not substantial enough over a period of fifteen weeks to have affected the level of nursing care as measured in this study. However, changes in potential productive time could be a substantial item if new schedules of working hours are implemented on a hospital wide, or even Province wide basis.

While this change in potential productive time in EI and EII does not constitute an actual dollar cost to the hospital, it can be regarded as an increase in fringe benefit to the nursing staff. It would seem unlikely that this fringe benefit was recognized as such by the nursing staff, or that it influenced their attitudes to the work situation. Relief staffing patterns (see Table 20) did not increase during Period II in either EI or EII, and as there were no significant changes in the characteristics of nursing care, it would appear that the nurses in both experimental units were being as productive in fewer available hours of work.

¹These hours were calculated for sixteen staff members in EI who worked fifteen weeks of the new schedule, and twenty-one staff members in EII who worked ten weeks of the new schedule. During the transition week, i.e., from the regular schedule to the new schedule, all nursing staff worked two twelve-hour and two eight-hour shifts.

Transfer Events

It is beyond the scope of this study to establish the dollar cost of within hospital transfers of nursing personnel from one unit to another, but the frequencies of transfer events were identified because of their relevance to the experimental situation. Transfer events are summarized in Table 18, from which it may be seen that there was a higher rate of transfer in Period I in both EI and EII. Six of these transfer events were directly related to the process of accommodating one nurse in EI, and two nurses in EII who were unable to take part in the study. All other transfer events occurred as a result of promotion or personal reasons unrelated to the experimental situation.

From the examination of selected fixed cost items it was concluded that there were no changes in the fixed costs of staffing when the hours of work of the nursing staff were redistributed.

Selected Variable Costs of Staffing¹

The total number of hours of sickness, absence without leave, and relief staff requirements for each unit during Periods I and II are summarized in Table 20. The number of sickness hours does not on its own contribute to "variable"

¹This interpretation of variable costs is based on lecture material of Professor L. J. Nestman, Assistant Professor in H.S.A., 550 (Health Services Finance), Division of Health Services Administration, University of Alberta, September-December, 1971.

TABLE 20

TOTAL NUMBER OF HOURS OF SICKNESS, ABSENCE WITHOUT LEAVE, AND RELIEF STAFF
REQUIREMENTS FOR THE CU, EI, AND EII DURING PERIODS I AND II

	CU		EI		EII	
	I	II	I	II	I	II
Sickness (including compassionate leave)	372	360	496	356	312	400
Absence without leave	-	-	8	24	8	-
Sickness Relief	112	80	176	108	136	52
General Relief	-	104	40	-	16	-

costs of staffing, as sick time allowance should properly be regarded as a fringe benefit, i.e., sick time allowance is normally included in the nursing staff budget and does not vary during the fiscal year. If a nurse is not replaced when sick, this event represents a variable cost saving, because work is accomplished by fewer people. Sickness relief hours were less in all three units during Period II, and although this may represent a cost savings to the hospital, the cost savings were comparable in all three units.

There were 140 fewer sickness hours in EI during Period I, and although this fact does not indicate a change in cost, it is relevant here from a behavioural standpoint, because of its potential impact on the experimental situation. The decrease in sickness time in EI is less likely to be due to the introduction of the new schedule than to the fact that sickness rates in the hospital were generally higher in Period I. These higher rates of sickness were not reflected in the sickness rates of the CU and EII during Period I, but differences between the three units were not attributable to the experimental situation because hospital personnel did not regard these differences as unusual.

One hundred and four hours of general relief staff hours¹ were required by the CU during Period II for the temporary

¹"General relief" refers to the system of sending extra help to a nursing unit when an increase in the volume of activity has occurred that cannot be safely handled by the regular complement of staff, or on such occasions as are stated in the text above.

replacement of a nurse who had been promoted and had transferred from the unit, thus differences in general relief hours between the three units were not attributable to the new schedule. Hours of absence without leave would not seem extensive enough to constitute a relevant item.

Having examined these cost factors for Periods I and II, it was concluded that there were no material differences in the selected variable costs of staffing between the three research units.

General Discussion

The findings in relation to the five dependent variables in this study having been presented separately, an attempt is now made to draw their salient points together. There were apparently no changes in patient satisfaction, selected characteristics of nursing care, or selected fixed and variable costs of staffing when the new schedule was introduced in EI and EII. There were also no apparent changes in global attitudes of nursing staff to their work, but their attitudes to the work schedule itself underwent significant change during the course of the study.

These findings would seem to constitute somewhat conflicting results. Both on the basis of the results of the binomial test and from the nurses' comments there seems to be no doubt that the nursing staff in both experimental units were dissatisfied with the new schedule. This dissatisfaction with one dimension of the work situation did not

appear to have a negative effect on overall attitudes to work. In spite of their dissatisfaction with twelve-hour shifts, nursing staff were apparently able to maintain comparable levels of the selected aspects of nursing care studied over the experimental period. As there were no significant changes over time within either of the two experimental units, even in EII where there were three work schedule changes, the question should be asked: were there really no changes, or were the variables studied relevant and/or were the instruments too insensitive to detect changes?

One cannot assume that because patients generally report satisfaction with their nursing care that they would continue to do so under the experimental conditions imposed by this study. Patient satisfaction would seem to have been a relevant variable to investigate even though the questionnaire used may not have been highly sensitive to changes in patient attitudes. The reader is reminded that only six patients (2.7 per cent) indicated that they were aware of, or concerned with, a change in the nursing work schedule, thus it would seem reasonable to expect that had there been gross changes in patient satisfaction when nurses worked twelve-hour shifts, these changes would at least have been reflected in the patients' additional comments, if not in the structured items of the questionnaire. The investigator submits that the findings in relation to patient satisfaction

were dependable.¹

There would seem to be little question as to the relevancy of nursing care as a variable to be examined in a field experiment of this nature. There may have been some changes in the level of nursing care in EI and EII during this experiment as several nurses reported not only that they were tired, but that their services to patients deteriorated when they worked twelve-hour shifts. These nurses may have been assessing certain aspects of nursing care, such as nurse/patient interactions, which would not have been encompassed by the Nursing Care Observation Sheet. It will be recalled that this instrument was designed to test only a few basic components of nursing care. The investigator suggests that because of the basic and objective nature of this instrument, and because the two nurse observers were not inconsistent in their ratings, the findings that no significant changes occurred in these selected aspects of nursing care during the study would seem to be dependable.

The sensitivity of the Job Satisfaction Questionnaire to detect changes in attitudes to work in response to work schedule changes has already been discussed. One further point that should be kept in mind is that nursing staff were aware of the temporary nature of the experiment, and the extent to which this knowledge tempered their responses to the questionnaire may not have been inconsequential.

¹These findings are discussed more fully on pp. 71-75.

While this instrument may not have been sensitive to changes in attitudes to work schedules per se, the responses to the shift preference item, as said before, would seem to be trustworthy.

Two final issues to be discussed arising out of the findings of this study are the significant differences in the selected characteristics of nursing care between the CU and EII at the pretest, and in work satisfaction of the staff throughout the study. It was expected that between unit analysis of data would assist in the interpretation of within unit changes over time, but the fact that the medical (EI and EII) and surgical (CU) units were not equivalent in relation to these two variables even at the pretest raises the question of the suitability of surgical units as controls for medical units in studies of this kind. The literature is as yet, not definitive enough to give any particular credence to alternative combinations of the three available nursing units in this study. It is beyond the scope of this study for the investigator to propose in detail ideas as to why these medical and surgical nurses differed significantly in work satisfaction; but if these serendipitous findings are generalizable to other medical and surgical nursing units, there would seem to be many possible reasons why such differences exist. For example, a central possibility would seem to be the fact that there are very fundamental differences in the nature of the task being performed, i.e.,

differences in the "technology" employed in these two specialties;¹ further, the intrinsic rewards of the work situation would seem to be more demonstrable in surgical units than in medical units in view of the generally higher patient turnover rates in surgical units. In any event, the work satisfaction of nurses who choose to work in various specialties would seem to be an interesting and worthwhile field for further enquiry.

Conclusions

It is emphasized here that this study was generally limited in scope, and in particular, limited in the length of time in which the new schedule was in operation, thus, generalizations from the findings must be made tentatively. If the findings of this study are generalizable, they would seem to suggest that in terms of patient care, there are at least no early contra-indications to the introduction of the compressed work week for nursing staff in general medical units of hospitals, that is if the nursing staff so wish. This latter proviso is an important one, as this study tells us nothing about what might occur if the compressed work week were imposed on an unwilling staff. Also, this study

¹According to Perrow, the technology or the therapy employed in various hospital units plays an important role in determining the social structure of the unit, and the manner in which specific goals are achieved. Charles Perrow, "Hospitals: Technology, Structure, and Goals," in Handbook of Organizations, ed. by James G. March (Chicago: Rand McNally and Co., 1965), pp. 910-71.

tells us nothing about what might have occurred if the nursing staff had been satisfied with the new schedule. It is possible, for example, that nurses could have liked the new schedule but that the level of patient care could have deteriorated. The somewhat conflicting results of this study would seem to lend support to the point that it is unwise to assume that there is necessarily a positive relationship between work satisfaction and work effectiveness or productivity.

In terms of the costs of staffing, the results of this study suggest that the implementation of compressed work week schedules for nursing staff in hospitals does not involve a change in cost. However, if an equivalent number of available nursing hours is provided to compensate for the reduction in potential productive time (which may occur as a result of redistributing the hours of work), an increase in the cost of staffing would be incurred.

The findings of this study having been presented and conclusions drawn, a summary is now presented in the following chapter, and recommendations are made.

CHAPTER V

SUMMARY AND RECOMMENDATIONS

Summary

There have been few experiments in re-scheduling the hours of work of hospital nursing staff, and those few reported appear to lack an acceptable level of methodological rigour. This study was undertaken to investigate systematically the relationship of a compressed work week for nursing staff and five dependent variables: patient satisfaction; selected characteristics of nursing care; work satisfaction of nursing staff; selected fixed costs of staffing; and selected variable costs of staffing.

Three nursing units of a general acute hospital, one surgical and two medical, provided the setting for this field experiment, and the study was designed to take place over a period of fifteen weeks. Nursing staff of the three units volunteered to take part in the study, thus they were positively biased in favour of the compressed work week at the beginning of the study. Compressed work week was defined as a particular work schedule consisting of six twelve-hour shifts and one eight-hour shift within a two week period, and was also referred to as "the new schedule."

In order to control for possible sources of internal

invalidity, a quasi-experimental research design was used. It was hoped that such a design would help to identify the existence of novelty and/or disruptive effects which were likely to occur in a study of this kind. The surgical nursing unit was used as a control unit (CU), and the two medical units were used as experimental units (EI and EII). Four testing periods were planned in order to collect data relevant to three of the dependent variables under investigation. The pretest was conducted before the introduction of the new schedule in the two experimental units, and testing was subsequently carried out at five week intervals. The new schedule was used throughout the study in EI, and alternated at five week intervals with the regular schedule (ten eight-hour shifts per two weeks) in EII. The second and third testing periods occurred just prior to these work schedule changes in EII, and the fourth testing period was conducted in the fifteenth and final week of the study.

The new work schedule (the experimental variable) used in this study was basically a redistribution of the regular eighty hours of work per two weeks; the work day was thereby extended and the work week "compressed." Two new schedules were designed for the sixteen and twenty-one members of the nursing staff in EI and EII respectively, using a two week repeating or cyclic schedule.

Three research instruments were used to measure patient satisfaction, selected characteristics of nursing care,

(SCNC), and work satisfaction of nursing staff. The Patient Satisfaction Questionnaire (Appendix I) was used in its original form,¹ and was believed to have content validity, but the reliability was not known, nor was it established in this study. A Nursing Care Observation Sheet (Appendix II) was constructed using items from an existing instrument² for the purpose of measuring SCNC, and additional items were specifically designed for use in this project. Criteria for assessing these items by two nurse observers were established by a committee of expert nurses. A test for consistency of rating by the two nurse observers revealed a composite correlation coefficient of .80, and the instrument was regarded as having content validity.

A Job Satisfaction Questionnaire (Appendix III) was constructed based in part on seventeen items from an existing instrument.³ A total of twenty five items were developed, and for each of these items a parallel item was constructed for the purpose of estimating the consistency of response by nursing staff to this questionnaire. An analysis of the

¹Faye G. Abdellah, and Eugene Levine, "Developing a Measure of Patient and Personnel Satisfaction with Nursing Care," Nursing Research, 5 (February, 1959), 100-108.

²Commission for Administrative Services in Hospitals, A Quality Control Plan for Nursing Service (Los Angeles: C.A.S.H., 1965). Mimeographed.

³Curt Tausky, "Work Satisfaction among Nurses," in Spoke Design for Inpatient Care: Final Report by Bright M. Dornblaser, and Eugene B. Piedmont (Amherst, Mass: Public Health Service, Department of Health, Education and Welfare, 1969), Ch. IV.

entire set of data collected with this instrument revealed that twenty-four of the paired items were reliable. Factor analysis was conducted on data from the twenty-four reliable pairs of items and six interpretable factors emerged from a quartimax rotation namely: (I) institutional organization, (II) work load, (III) task, (IV) work group interaction, (V) off duty time, and (VI) nursing unit organization. As twelve pairs of items loaded on these six factors, this was regarded as evidence of some construct validity. For cross validation purposes a direct question of shift preference, having high face validity was included in the Job Satisfaction Questionnaire, and nursing staff in EI and EII responded to this item at the 2nd, 3rd and 4th testing periods.

Data relative to fixed and variable costs of staffing was supplied by hospital personnel for each of the three units during the study period, and for the preceding fifteen weeks, and comparisons were made.

The data collection procedure followed the same sequence at each of the four testing periods. The Patient Satisfaction Questionnaire was completed by all patients who were well enough on a randomly selected day, in all three units during the week before nursing care observations were made. On a randomly selected day in the following week, two nurse observers made independent, simultaneous observations on a random selection of patients in the three nursing units

according to the check list of items on the Nursing Care Observation Sheet. During the same week, nursing staff completed Job Satisfaction Questionnaires, returning them unidentified in sealed envelopes.

The analysis of data relative to patient satisfaction, SCNC, and work satisfaction was conducted first by comparing between unit scores on these three variables at all four testing periods, and then by comparing within unit scores at all four testing periods. The between nursing unit analysis was expected to assist in interpreting potential changes over time, but the major focus of the analysis was upon the within nursing unit changes at the four testing periods. Analysis of patient satisfaction data revealed that there were no apparent between unit or within unit differences in this variable at the four testing periods, thus the null hypothesis that patient satisfaction is not affected by a redistribution of working hours of nursing staff was supported. Analysis of SCNC data revealed statistically significant differences between the three nursing units at the pretest only. As there were no statistically significant differences observed within the nursing units throughout the study, the null hypothesis in relation to this dependent variable was also supported.

Analysis of job satisfaction data revealed that statistically significant differences existed between nursing units throughout the study, specifically between the CU (highest

scores) and EII. Non-significant fluctuations in work satisfaction scores were observed in EII, lower scores being obtained when nurses were working twelve-hour shifts. An overall non-significant decline in work satisfaction scores was observed in all three nursing units over the entire experimental period, the explanation for which was thought to lie in (1) a novelty and/or Hawthorne effect, (2) an historical effect, and/or (3) a common variable in the environment which affected all three units in a similar manner. The analysis of responses to the item of shift preference used for cross validation purposes, revealed that as one would expect the effects of novelty to decline, a directional and statistically significant change in preference for eight-hour shifts was observed. Thus it was concluded that while the Job Satisfaction Questionnaire may not be sensitive to changes in global attitudes to work roles as a result of work schedule changes, the evidence pertaining to the questionnaire item on shift preference was sufficiently trustworthy to reject the null hypothesis. Responses to an open ended question on the Job Satisfaction Questionnaire indicated that nurses perceived twelve-hour shifts as being too long and too tiring, and that the advantages of more consecutive time off duty did not compensate for the physical and emotional exhaustion experienced after working four consecutive twelve-hour shifts.

The findings with regard to costs of staffing were that there were no material changes in the selected indices of

fixed and variable costs of staffing. There was however, a slight decrease in the potential productive time (actual hours worked exclusive of meal breaks) of nursing staff who worked the new schedule as a direct result of redistributing their hours of work. This situation occurred because a second thirty minute meal break was allowed when nurses worked a twelve-hour shift, and this was interpreted as being a slight increase in fringe benefits to the nursing staff rather than a change in cost to the hospital.

The findings of this study were as follows: there were no material changes in selected fixed and selected variable costs of staffing; patient satisfaction and SCNC were not affected by a redistribution of the working hours of nursing staff. Global attitudes of nurses to their work roles were not affected by a change in work schedule, but specific attitudes to one dimension of the work situation, namely, the new schedule, were adversely affected by a redistribution of working hours. It was concluded from these findings that there are no early contra-indications in terms of patient care and costs of staffing, to the implementation of compressed work week schedules for nursing staff in general medical units of hospitals, provided that the nurses are willing to work such schedules.

Recommendations

Recommendations made in this final section fall into two groups, both of which relate to experimentation with

compressed work week patterns for nursing staff. Methodological recommendations are based upon the point that the kind of research reported here is constrained by the lack of reliable and valid instruments for measurement purposes. Work scheduling recommendations are based upon the findings of this study, even though generalizations from these findings can be made only tentatively.

Methodological Recommendations

In the event that this study is replicated it is recommended that:

(1) the "assessment guide" of the Nursing Care Observation Sheet (Appendix II) be revised in order to render the instrument appropriate for use in other hospitals. It is recognized that some of the standards set by the nursing personnel of the hospital in which this study took place may not be regarded as particularly relevant elsewhere.

(2) to use the Job Satisfaction Questionnaire properly, (Appendix III), factor scores (particularly those related to Factor V) should be analyzed, and item 51 should be repeated for cross validation purposes; the conflicting results observed in this study may then be rectified. Item 51 should also be completed by control group subjects.

At a more general level, it is recommended that more comprehensive methods of evaluating nursing care be developed to replace the piecemeal methods which would seem to be currently in use. Efforts should also be made by the nursing

profession to work with the consumer of health services--the patient, and other health professionals to evolve a broad methodological approach to the assessment of the patient's total health care episode.

There would seem to be some evidence from this study that work satisfaction may differ between medical and surgical nursing staff, therefore it is recommended that research be conducted to investigate intra-occupational work satisfaction in various types of nursing specialties in hospitals and other health agencies. It is further recommended that instruments used for such investigations should demonstrate sound reliability and validity, and that the aims of this research should be to attempt to identify the particular strains and stresses which are assumed to characterize the nurse's work role. The practical implications of such research include the reduction of "avoidable" nursing turnover rates, and potentially, the improvement of job satisfaction and/or nursing care standards through better placement of personnel.

Work Schedule Recommendations

It appears that replacing the long standing three-shift system with a two-shift (twelve-hour) system would in many ways be advantageous, but it is suggested that twelve hours is an inordinate amount of time to be at work, particularly for women who have additional obligations at home. There would seem to be a great many ways in which the working

hours of nursing staff could be scheduled, and in the event that the total number of hours of work per week is reduced as a result of collective bargaining activities and/or legislation, new kinds of work schedules may be needed. Thus, if nursing staff wish to redistribute their hours of work and experiment with new kinds of work schedules, the following recommendations should be kept in mind.

(1) Systematic experimentation should be carried out, perhaps with ten-hour shifts, or with varying combinations of shifts, e.g., ten-, eight-, six-, and 4-hour shifts. Work schedules other than simple three-shift or two-shift systems would seem to involve overlapping of shifts. While this may be considered confusing initially, it would seem to offer a more flexible approach to an otherwise rigid system of scheduling the hours of work of nursing staff in hospitals. Further, it would seem to offer a wider choice of working hours to nurses with or without additional home commitments, and might offer an inducement to inactive nurses to return to work.

(2) Experimentation with new kinds of work schedules should be carried out in various types of hospital units, and in community health agencies such as public health and home care agencies. It is suggested that the introduction of compressed work week patterns in community health agencies might provide a means of extending nursing services, not merely during the week days but including the weekends.

Finally, it is recommended that should experimentation

with new kinds of work schedules be carried out, the variables studied in this project, i.e., the welfare of patients and nursing staff, the standard of the nursing services rendered, and the costs of staffing, should be monitored.

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APPENDIX I

TO OUR PATIENTS:

Today this hospital is making a study to find out how to give better nursing care to you, and to all our patients in the future. On the following pages, we have listed things which may have happened to you while you have been here. We are asking all patients who are well enough to help the hospital and the nursing staff by checking these items.

1. Read each item carefully.
2. If something did happen today, put a check in the box which says, "This happened today." If it did not happen today, but did happen some other day during this stay in hospital, put a check in the box which says, "This happened some other day." (You may have to check both boxes in some cases.)

If it did not happen during this stay in the hospital, then check the box which says, "This did not happen."

3. Please be frank. Your frank answers added to all other patients' answers will be of assistance to us in this study.
4. If there is something you want to say which is not included, please write it on the last page.
5. Do not sign your name.
6. Put your completed form in the envelope and seal it.

Thank you for your co-operation.

During My Present Stay
in This Hospital

PATIENTS: PLACE CHECK MARKS IN APPROPRIATE
BOXES FOR ALL STATEMENTS

	This Happened Today	This Happened Some Other Day	This Did Not Happen
(1. Radio or TV noisy (((If a radio or TV was noisy today, you would check "This happened today." (If noisy some other day during your present stay in this hospital, you (would check, "This happened some other day." If noisy both today and (some other day, you would check both boxes.	✓	✓	
EXAMPLES (2. My bath was not given on time ((If your bath was always given on time during your present stay in this (hospital, you would check this statement in the third box.			✓
3. Couldn't get anything from the nurse for pain.			
4. My call for a nurse was answered very promptly.			
5. Food trays left in front of me too long.			
6. Thermometer left in too long.			
7. No answer to call for a nurse for a long time.			
8. Bedpan was left with me too long.			
9. Bedpan was handled too noisily.			
10. Nurse or aide didn't leave me clean towels.			
11. Food was served in a hurry.			
12. Drinking water wasn't changed.			
13. Other patients made disturbing noises.			

During My Present Stay
in This Hospital

PATIENTS: PLACE CHECK MARKS IN APPROPRIATE BOXES FOR ALL STATEMENTS	This Happened Today	This Happened Some Other Day	This Did Not Happen
14. Nurse left before I could ask her questions.			
15. Had to wait too long for a bedpan.			
16. My nurse left me alone too long when I was allowed up.			
17. There was no-one to feed me when I needed help.			
18. Room was too chilly or too warm to sleep.			
19. Not propped up, making it hard to enjoy my meal.			
20. My nurse explained my care to me.			
21. Nurse wanted me to do too much for myself.			
22. I was not bathed as thoroughly as I would like.			
23. Light was too bright when I tried to sleep.			
24. There was too much noise in the hall.			
25. Nurses didn't seem interested in me.			
26. Bathroom was not clean.			
27. Radios, TV's or record players were played too loudly.			
28. Bed was not made right.			
29. My bath, meal or rest period interrupted by treatment.			
30. Had to get out of bed to take a bath even though I felt bad.			

During My Present Stay
in This Hospital

PATIENTS: PLACE CHECK MARKS IN APPROPRIATE BOXES FOR ALL STATEMENTS.	This Happened Today	This Happened Some Other Day	This Did Not Happen
31. Got wakened up too early for temperature taking.			
32. Was not served milk or fruit juice after I requested it.			
33. Room in general was not made neat and orderly.			
34. My nurse is always in a hurry.			
35. My nurse wouldn't tell me what was wrong with me.			
36. My food was cold when served.			
37. My nurse did not tell me anything about my treatment.			
38. My nurse was especially nice to me.			
39. Had to wait a long time to use the bath-room.			
40. Nurse was unfriendly.			
41. Didn't see a nurse often enough.			
42. Bed was not changed when needed.			
43. Nurse did not wash and rub my back well.			
44. Air in room was poor.			
45. Didn't get my medicine until late.			
46. My aide is always in a hurry.			

During My Present Stay
in This Hospital

PATIENTS: PLACE CHECK MARKS IN APPROPRIATE
BOXES FOR ALL STATEMENTS

This Happened Today	This Happened Some Other Day	This Did Not Happen
---------------------------	---------------------------------------	---------------------------

SOME OF THE FOLLOWING STATEMENTS COULD HAVE HAPPENED ONLY TO SOME PEOPLE.
PLEASE CHECK ANY STATEMENT WHICH APPLIES TO YOU. LEAVE THE OTHERS BLANK.

47. My bandage or dressing was too tight.			
48. No-one checked needle in my arm to see that fluid was running.			
49. I was not told when I would be operated on.			
50. Asked for a wheelchair and didn't get one.			
51. Asked for a heat lamp but I never got it.			
52. My bed got wet from treatment.			

ADDITIONAL COMMENTS:

TABLE 21
REVISED AND ORIGINAL WEIGHTS¹ FOR FIFTY ITEMS OF
THE PATIENT SATISFACTION QUESTIONNAIRE

Item	Revised Weight	Original Weight	Item	Revised Weight	Original Weight
3	4	5	28	1	2
4	0	0	29	3	3
5	1	1	30	2	4
6	2	2	31	2	1
7	4	5	32	1	1
8	2	4	33	1	3
9	0	2	34	3	3
10	1	3	35	3	2
11	1	2	36	1	4
12	2	3	37	3	2
13	3	2	38	0	0
14	3	3	39	4	5
15	4	4	40	4	4
16	3	3	41	3	3
17	4	4	42	3	4
18	3	4	43	2	2
19	2	4	44	2	3
20	0	0	45	3	2
21	2	2	46	3	2
22	2	3	47	4	3
23	2	3	48	4	4
24	3	3	49	4	3
25	4	3	50	2	2
26	1	4	51	0	3
27	3	4	52	1	3

Note: Items 4, 20 and 38 are positive statements of items 7, 37 and 40 respectively, and were assigned weights of 0. The criteria for assigning the revised weights were: (4) critical; (3) very important; (2) important; (1) relevant; and (0) not relevant.

¹Faye G. Abdellah, and Eugene Levine, Patients and Personnel Speak (Washington, D.C.: Public Health Service Publication, No. 527, Revised 1964), pp. 35-37.

APPENDIX II

NURSING CARE OBSERVATION SHEET

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Date:	Unit:	T.P.R.	B.P.	Daily medication:
Observer:	Room & No:	Weight:	I.V.	IRN medication:
Name of Patient:		Intake & Output:		Activity:
Age:		Catheter:		Side rails:
Diagnosis:		Treatments:		Level of Care Assessment:
ITEM	YES	NO	ASSESSMENT GUIDE	COMMENTS
<u>THE KARDEx</u>				
C1. Is there a specific nursing care plan for this patient?			There should be information on the Kardex with regard to the individual needs and problems of this patient.	
C2. Do the transcribed medication orders give clear direction?			Date, drug, dosage, method and time of administration.	
C3. Has any essential information been omitted?			Name, age, diagnosis, diet, activity, level of care.	
C4. Is the Kardex legible?				
C5. Is the level of care assessment up-to-date?			Information on the Kardex should convey the acuity of the patient's condition.*	
O1. Have side rails been indicated when necessary?			Unconscious, disorientated or restless patients, and those over 65 years of age.	
<p>*Levels of Care: (Based on amount of time spent giving nursing care to the patient.)</p> <p>I. Complete bed rest, I.V., Foley catheter, frequent feedings or dressings, total care.</p> <p>II. Mostly in bed, may be up in chair. Needs help with washing and feeding.</p> <p>III. Patient is up, may need some help with self-care.</p> <p>IV. Patient is up all the time - minimal care.</p>				

ITEM	YES	NO	ASSESSMENT GUIDE	COMMENTS
<u>THE PATIENT</u>				
C6. Does the patient require immediate attention?			Is call light on? Does patient need assistance?	
C7. Is patient comfortable?			"Are you comfortable?"	
C8. Is call light within easy reach and working?			Cord should be clipped to bed - test light.	
C9. Are personal effects within easy reach?			Items on bedside locker & over-bed table, water jug.	
C10. Is skin condition of the patient satisfactory?			Is skin intact or broken on sacral area, elbows, heels or ankles?	
C11. Is bedpan empty and accessible?			In bedside locker with cover available.	
C12. Is the room appearance satisfactory?			For this particular moment in time.	
C13. Is the bedside locker appropriately stocked?			Washbowl, toothmug, X-basin, soap dish, bedpan, & urinal when necessary.	
C14. Is the washroom tidy, clean and appropriately stocked?			Hand towels, soap, deodorant spray, toilet paper, pitcher for measuring urine when applicable.	
C15. Is the immediate environment satisfactory to the patient?			"Have you any comments to make about the temperature of your room?" "What about the noise in this room?"	
O2. Is the urinal empty and accessible?			In bag on side of bedside locker. This is not applicable if patient has a Foley catheter.	
O3. Is patient appropriately positioned?			In the case of patients unable to move without assistance.	

ITEM	YES	NO	ASSESSMENT GUIDE	COMMENTS
<u>THE PATIENT</u> - continued.				
04. Before meal - is patient ready?			Positioned and prepared.	
05. After meal - has tray been removed?				
06. Is intake and output sheet available at bedside?			If fluid balance is being recorded.	
07. Are side rails up where necessary?			Check Kardex for directions. Side rails should be on the bed for patients over 65 years of age.	
08. Is dressing clean and comfortable?			No visible discharge, dressing and bandages secure. Check I.V. sites.	
09. Is equipment working satisfactorily?			I.V., suction, catheter, drainage, oxygen, humidifier, wheelchair etc.	
010. Is nursing activity appropriate?			Is procedure being carried out according to basic principles?	
011. Is nursing interaction appropriate?			Acceptable, unacceptable?	

ITEM	YES	NC	ASSESSMENT GUIDE	COMMENTS
<p><u>THE PATIENT'S CHART</u></p> <p>C16. Has daily medication been recorded correctly?</p> <p>or</p> <p>Has PRN medication been recorded correctly?</p>			<p>Check last time drug was given. It should be recorded on medication sheet, (or diabetic or anticoagulant sheet) with time, dosage, method, site of injection and signature.</p> <p>This is recorded in the nurses' notes.</p>	
C17. Have all doctors' orders written more than 24 hours ago been signed by them?			Check the last two dates on which orders were given, commencing 24 hours from the time of observation.	
C18. Is graphic sheet complete?			T.P.R., weight, B.P., stools. If graphic sheet begins on day of observation, check previous sheet.	
C19. Is intake and output recorded where necessary?			Include 24-hour summaries.	
<p><u>NURSES' NOTES</u></p> <p>C19. Is there a progress note on the patient's condition?</p>			Check the 24-hour period immediately preceding the shift on which observation takes place.	
C20. Are nurses' notes legible?				
C21. Are signatures accompanied by the professional status of the recorder?				
C22. Is the metric system being used consistently?			Dosages of drugs, time of day.	
C13. Have special treatments been charted with times?				

APPENDIX III

TO MEMBERS OF THE NURSING STAFF;

Your responses to this questionnaire will be treated as confidential information and under no circumstances will your individual answers be disclosed.

Please answer every statement. Your honest opinion is important to the study. If you find it hard to make up your mind on a statement, choose the answer which most closely represents your opinion. Indicate your answer to each statement with a check mark (✓) in the appropriate box.

SA means Strongly Agree
 A means Agree
 D means Disagree
 SD means Strongly Disagree

Example: Statement #46 reads:

"I am satisfied with my present salary."

SA	A	D	SD
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

If you check box D, this means that you disagree with the statement.

Please check one of the following: R.N.____ Non-R.N.____

January, 1972.

Judith Hibberd,
 Graduate Student,
 Division of Health Services Administration,
 University of Alberta,
 Edmonton, 7, Alberta.

1. The report at beginning of shift gives me adequate information about the patients to whom I am assigned.

SA	A	D	SD

2. My present salary is adequate for the kind of work that I am doing.

SA	A	D	SD

3. This hospital ignores the problems that people sometimes have on the job.

SA	A	D	SD

4. I get accurate information about what is going on in this hospital.

SA	A	D	SD

5. Our current staffing schedule is flexible enough to allow the staff to cope with occasional increases in work load.

SA	A	D	SD

6. The staff on our unit provide a good standard of nursing care.

SA	A	D	SD

7. My job gives me an opportunity to do the sort of work that I enjoy.

SA	A	D	SD

8. The time seems to go slowly when I am working.

SA	A	D	SD

9. In my job, I have an opportunity to use the skills in which I excel.

SA	A	D	SD

10. I feel free to make necessary decisions for carrying out the responsibilities assigned to me.

SA	A	D	SD

11. There are enough staff on this unit to cope with a normal work load.

SA	A	D	SD

12. The hospital management keeps me up-to-date with what is going on here.

SA	A	D	SD

13. There is no confusion on this unit as to what each level of nursing staff is supposed to do.

SA	A	D	SD

14. Staff members on this unit are willing to help each other when they become very busy.

SA	A	D	SD

15. Staff in this hospital are treated with consideration by management.

SA	A	D	SD

16. It seems as if I never have time for recreation and pastimes in my off duty.

SA	A	D	SD

17. I often feel worn out on the job.

SA	A	D	SD

18. I can influence the person above me in matters concerning the work to be done on my unit.

SA	A	D	SD

19. I am satisfied with the quality of nursing care given on this unit.

SA	A	D	SD

20. I have the feeling of not belonging on this unit.

SA	A	D	SD

21. The nursing staff often discuss patient care problems amongst themselves.

SA	A	D	SD

22. My work gives me a chance to do the things at which I am particularly competent.

SA	A	D	SD

23. I spend a good deal of my time at home relaxing.

SA	A	D	SD

24. When our work is well done, it is appreciated.

SA	A	D	SD

25. If staff members are having troubles at work, they can get help here.

SA	A	D	SD

26. I get plenty of rest during my time off.

SA	A	D	SD

27. I am really doing something worthwhile in my job.

SA	A	D	SD

28. The nursing staff on this unit have a voice in the planning of activities and changes.

SA	A	D	SD

29. I have the feeling of accomplishing something important when I am working.

SA	A	D	SD

30. I have plenty of opportunity to use my own judgement in doing my work.

SA	A	D	SD

31. The administration of this hospital cares about the job satisfaction of its employees.

SA	A	D	SD

32. I am given enough information about the conditions and needs of my patients when coming on duty.

SA	A	D	SD

33. I have the feeling that if I need moral support, someone here will give it to me.

SA	A	D	SD

34. The different kinds of nursing staff on this unit are familiar with each others' responsibilities.

SA	A	D	SD

35. I frequently feel tired at work.

SA	A	D	SD

36. When I am off, I have enough leisure time to suit my needs.

SA	A	D	SD

37. We have satisfactory staff coverage on our unit.

SA	A	D	SD

38. The nursing staff are consulted whenever plans affecting them are made.

SA	A	D	SD

39. I find that when I am at work the time usually passes quickly.

SA	A	D	SD

40. I am made to feel part of the nursing team on this unit.

SA	A	D	SD

41. We can take care of fluctuations in the amount of work to be done with our present staffing schedule.

SA	A	D	SD

42. When you really need some backing-up on this unit, you don't get any.

SA	A	D	SD

43. We are complimented for good work on this unit.

SA	A	D	SD

44. The suggestions that I make about improving the care of patients are considered by the person to whom I am responsible.

SA	A	D	SD

45. During heavy work periods, staff members co-operate with each other to get the work done.

SA	A	D	SD

46. I am satisfied with my present salary.

SA	A	D	SD

47. I like the kind of work that I am doing on this unit.

SA	A	D	SD

48. I have so much work to do that I don't do it well.

SA	A	D	SD

49. The nursing staff on this unit co-operate in solving the problems of individual patients.

SA	A	D	SD

50. I could do my work better if I had less work to do.

SA	A	D	SD

51. Which staffing schedule do you prefer to work?

8-hour shifts _____ 12-hour shifts _____

52. The following question is optional. What do you consider are the advantages and/or disadvantages of working a 12-hour shift staffing schedule?

Advantages: _____

Disadvantages: _____

Thank you for your co-operation.

APPENDIX IV

TABLE 22
WORK SHEET USED FOR DESIGNING THE NEW SCHEDULE FOR EI

TIME PERIOD	NURSING STAFF	S	M	T	W	T	F	S	S	M	T	W	T	F	S
2315 to 0730	RNs	B	B	B	C	C	5	5	5	B	B	B	C	C	B
	Non-RNs	E	5E	D	D	D	1	1	D	D	D	D	5	5	E
0715 to 1115	RNs	12	145	345	4A	2A	2A	4A	4A	14	14	25A	25A	2A	12
	Non-RNs	2	4	145	145E	23EH	23EH	34H	34H	45	145	13H	23EH	23H	12
1115 to 1530	RNs	12F	145	1345	34AF	23AF	2A	4A	34A	134	134	123A	25AF	2AF	12A
	Non-RNs	2	4	145	145E	23EH	23EH	34H	34H	45	145	13H	23EH	23H	12
1515 to 1930	RNs	12F	145G	145G	34F	23AF	2F	4AG	3AG	134	134	23AG	5FG	25F	12F
	Non-RNs	2	2	45	145E	2EH	23H	34H	34	45	14	13H	23EH	23H	12
1915 to 2330	RNs	BF	BG	1G	3F	35F	5F	5G	3BG	3B	3B	3G	FG	5F	BF
	Non-RNs	5E	2	D	D	1	1	D	D	D	D	5	5	E	E

Note: Numerals and letters correspond to the nursing staff indicated in Table 2, p. 52.

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